



# CESEC

'Āpo'ora'a Matutu Ti'a Rau e Mata U'i Nō Pōrīnetia Farāni

Conseil Économique, Social, Environnemental et Culturel de la Polynésie française

## RAPPORT DU CESEC

**SUSTAINABLE DEVELOPMENT OF  
TE MOANA NUI A HIVA,  
OUR MARINE HERITAGE, BETWEEN PRESERVATION  
AND EXPLOITATION :  
WHAT IS FRENCH POLYNESIA'S VISION ?**



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# SUSTAINABLE DEVELOPMENT OF TE MOANA NUI A HIVA, OUR MARINE HERITAGE, BETWEEN PRESERVATION AND EXPLOITATION : WHAT IS FRENCH POLYNESIA'S VISION ?

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Self-referral proposed by **Mr Patrick GALENON**, to the employees' college, and adopted by the plenary meeting **on January 30, 2025**.

The Bureau the Economic, Social, Environmental and Cultural Council has entrusted the " **Economy** " Commission with the preparation of a draft report entitled: *The sustainable development of Te Moana Nui a Hiva, our marine heritage, between preservation and exploitation - What vision for French Polynesia ?*

The " **Economy** " commission, chaired by **Mr Jean-François BENHAMZA**, appointed **Ms Mere TROUILLET** and **Mr Patrick GALENON** as rapporteurs.

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« I TE TŌPATA NOA I  
FATUHIA AI TE MOANA  
HĀHANO. »

*-FERURIRA'A MĀ'OHI*



“C’EST AVEC DE SIMPLS GOUTTES QUE L’ON CONSTRUIT  
L’IMMENSITÉ DE L’OCÉAN.” - *PENSÉE POLYNÉSIENNE*

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“ IT IS WITH SIMPLE WATER DROPS THAT WE BUILD THE  
IMMENSITY OF THE OCEAN.”- *POLYNESIAN THOUGHT*





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The Great Pacific Garbage Patch (GPGP)  
 Caroline Power Photography

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Drifting DCP beached at HAO

Tahiti infos



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Photo of the SWAC at the FPHC - Tahiti 📷 Jean-François BENHAMZA

# INTRODUCTION



The preservation of Polynesia's marine heritage is closely linked to the sustainable management of the Pacific Ocean. With this in mind, the Economic, Social, Environmental and Cultural Council (CESEC) presents this report entitled "The sustainable development of Te Moana Nui a Hiva, our marine heritage, between preservation and exploitation - What vision for French Polynesia? This study aims to contribute to discussions at the 2025 Ocean Summit, highlights the major challenges and benefits offered by the balanced management of this unique maritime environment.

The institution will analyze the policies and strategies that French Polynesia has implemented and plans to implement to reconcile the preservation of our marine heritage with economic and social imperatives. The aim is to determine how local authorities, in collaboration with national and international stakeholders, can promote sustainable development that respects marine ecosystems while meeting the needs of local people and their unique culture.

## Te Moana Nui a Hiva

"Te Moana Nui a Hiva" refers to the vast expanse of the Pacific Ocean surrounding the islands of French Polynesia. In French Polynesia, the sea is much more than an environment; it is a world, a living, sensitive matrix where life constantly takes shape and evolves. **Polynesians do not live "on islands", but in Te Moana Nui a Hiva.**

Deeply rooted in Polynesian culture and tradition, this term symbolizes the immensity of the ocean and the vital link between island people. "Te Moana Nui a Hiva" is seen as a shared heritage, a natural and cultural treasure that must be preserved<sup>1</sup>.

This ocean interconnects the Polynesian islands and their marine environment. It plays a central role in the daily lives, economy and cultural identity of the Polynesians. As a vital resource and a place where ancestral knowledge is passed on, it represents a major challenge for present and future generations. Recognized as some of the greatest navigators of all time, Polynesians have been able to read and master the ocean in a way that is unparalleled, forging a distinctive and lasting connection with this maritime space.

## The Pacific Ocean, the largest and deepest ocean with fascinating features

The Pacific Ocean is the largest of the oceans, covering around **165.25 million square kilometers**, nearly **32% of the earth's surface**<sup>2</sup>. It accounts for around **50% of the total volume of the oceans**, with an estimated volume of 714.4 million cubic kilometers<sup>3</sup>.

From the western coasts of the Americas to Oceania, from Asia to Russia, this vast ocean is home to approximately **30,000 islands**, divided between the regions of Polynesia, Melanesia and Micronesia. The Pacific Ocean is linked to other ocean basins, such as the Indian Ocean via the Strait of Malacca and the Atlantic Ocean via the Strait of Magellan.

The deepest point in the Pacific, known as Challenger Deep in the Mariana Trench, reaches an impressive depth of **11,034 meters**, making it the deepest point recorded on Earth. By way of comparison, this depth far exceeds the height of Mount Everest, the world's highest mountain, at 8,849 meters. If Everest were placed in the Challenger Deep, its summit would remain more than 2,000 meters below the surface of the ocean.

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<sup>1</sup> Bruno Saura, "Une appellation transnationale pour l'Océan Pacifique : Te moana nui a Kiwa (Nouvelle- Zélande) - Te moana nui a Hiva (Tahiti)", Archivio antropologico mediterraneo [Online], Anno XXV, n. 24 (2) | 2022, online since 31 December 2022, accessed 29 October 2024. URL: <http://journals.openedition.org/aam/5884>; DOI: <https://doi.org/10.4000/aam.5884>.

<sup>2</sup> UNESCO Intergovernmental Oceanographic Commission (IOC) <https://oceandecademed.org/fr/nous-vous-presentons-locean-pacifique/>

<sup>3</sup> Encyclopaedia UNIVERSALIS.





The name "Pacific" was given to this ocean by the Portuguese explorer Ferdinand Magellan. During his voyage to the Philippines, he noticed that the waters were relatively calm, which led him to name it "Mar Pacifico", meaning "peaceful sea".

Ocean circulation linked to the Coriolis effect divides the Pacific Ocean, at the Equator, into two distinct zones : **the North Pacific and the South Pacific**. These two regions play major roles in regulating our planet's global climate.

**French Polynesia is an integral part of the South Pacific.** Its geographical position gives it a strategic place in the oceanographic and climatic dynamics specific to this region. As an island territory spread over a vast maritime area, it is directly affected by ocean circulation phenomena that influence marine biodiversity as well as environmental and climatic conditions on a regional and global scale.

The Coriolis effect, resulting from the Earth's rotation, deflects currents and winds to the right in the northern hemisphere and to the left in the southern hemisphere. This phenomenon creates distinct<sup>4</sup> ocean gyres in each hemisphere, shaping ocean flows and their interaction in the equatorial zone<sup>5</sup>.

The ocean, organized in layers according to salinity and temperature, is stratified, with very cold and stable deep waters, while surface temperatures vary, with the North Pacific being slightly warmer than the South due to geographical and climatic differences. As a result, there is a specific zone in the western Pacific called the "warm water pool", characterized by exceptionally warm surface waters close to 30°C, and involved in climatic phenomena such as El Niño and La Niña.

The salinity of the Pacific varies from region to region and from season to season, influencing with temperature the vital exchanges of oxygen and nutrients as well as the deep thermohaline currents<sup>6</sup>, which are essential for regulating the global climate and the health of marine ecosystems.

Climate patterns in the Pacific differ between its hemispheres and show regional contrasts. Phenomena such as El Niño (characterized by abnormal warming of surface waters), La Niña (the opposite of El Niño, marked by abnormal cooling of surface waters) and tropical cyclones, including hurricanes and typhoons, regularly influence temperatures and weather conditions in different parts of the ocean. These events play an important role in seasonal variations and their regional impacts.

The Pacific Ocean, **rich in biodiversity**, is home to unique ecosystems such as the kelp (brown seaweed) forests of the North and South American coasts, as well as the world's most important tropical coral reefs, including the Great Barrier Reef. These habitats support a wide variety of marine life, with the number of species decreasing from west to east, from invertebrates to iconic marine mammals such as whales, sea turtles, dolphins, tuna and sharks.

The characteristics of the Pacific seabed are the result of plate tectonics, particularly the "Ring of Fire", a subduction zone containing most of the world's active volcanoes, subject to the most powerful earthquakes. As the Pacific basin shrinks, the East-Pacific Rise is generating new terrestrial crusts, while tectonic phenomena are shaping its landscapes, as observed in the Peru-Chile Trench.

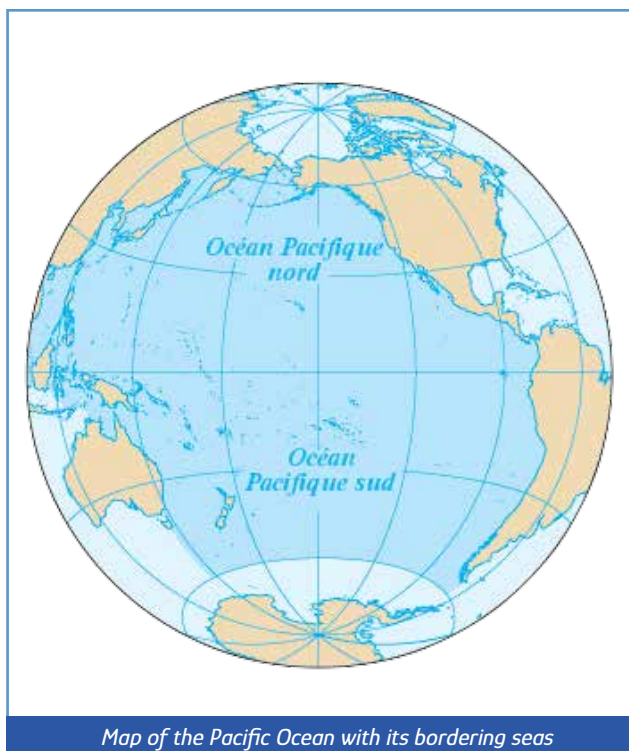
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<sup>4</sup> A gyre is a gigantic oceanic eddy resulting from the convergence of several ocean currents (according to the Larousse dictionary).

<sup>5</sup> Anders Persson "How Do We Understand the Coriolis Force?", European Centre for Medium-Range Weather Forecasts, Reading, Berkshire, United Kingdom, Bulletin of the American Meteorological Society.

<sup>6</sup> Thermohaline currents refer to the circulation of water masses in the oceans, influenced by differences in temperature (thermo) and salinity (haline). These variations in density cause vertical and horizontal movements, forming a global circulation loop known as the "thermohaline circulation" or "ocean conveyor belt", which plays a key role in regulating the Earth's climate. Ref: IOC-UNESCO "Diving into the depths of the Pacific Ocean", published online on 27 April 2022 at <https://oceandecademed.org/fr/magazines/>.

The Pacific Ocean is rich in mineral resources such as rare earths, cobalt, nickel, copper, bromine and magnesium, as well as rich deposits of natural gas and oil (explored near Vietnam, the Philippines, Indonesia, California, Russia and China)<sup>7</sup>. These resources are extracted from seawater, alluvial deposits and the continental shelf.



Map of the Pacific Ocean with its bordering seas

For French Polynesia, whether the focus is fishing or mineral resources, it is imperative to adopt a **holistic approach to the South Pacific**, aimed at promoting sustainable economic development for the benefit of the local populations of Oceania, while guaranteeing the preservation and protection of our ocean.

This recommended holistic approach is based on an integrated vision that considers the interactions between marine ecosystems, human activities and climate issues. It promotes balanced management by combining conservation and innovation, such as nature-based solutions and the circular economy. Including local communities is essential to the success of appropriate and sustainable initiatives. By combining the protection of marine habitats with responsible economic practices and resource management, this approach aims to preserve the oceans while enabling harmonious development.

## Geopolitical stakes of the Polynesian maritime space

French Polynesia, located in the heart of the Pacific Ocean, is made up of 119 islands<sup>8</sup> divided into five archipelagos: Society, Austral, Marquesas, Tuamotu and Gambier Islands. It covers a maritime area of almost 5 million km<sup>2</sup>, representing nearly 50% of the French Exclusive Economic Zone (EEZ) estimated at around 11 million km<sup>2</sup>. This **makes it the second largest administrative maritime jurisdiction in the world**.

Although it covers only 3% of the Pacific Ocean, with a maritime surface area as vast as that of Europe, this region gives France considerable strategic potential in terms of influence and development, thus also representing a major responsibility.

The current geopolitical context highlights a growing 'maritimization', particularly in the Pacific. Major powers such as China, the United States, Russia and India are developing control strategies linked to the region's oceanic dimension, which has become **the world's new center of gravity**.

China, for instance, dominates the maritime sector, accounting for 59% of global shipbuilding in 2023<sup>9</sup> and operating 15 of the world's 20 largest ports. It also has the largest merchant fleet (250 million gross tonnes<sup>10</sup>) and the second-largest military fleet. China is extending its influence in

<sup>7</sup> Cyrille P. Coutansais, Claire Marignan "The sea, a new El Dorado?" Published on 15 November 2017 - La Documentation française.

<sup>8</sup> ISPF "French Polynesia in brief 2023".

<sup>9</sup> Adeline Descamps in Le Journal de la Marine Marchande "Construction navale : dix ans après sa stratégie « Made in China 2025, Pékin n'a pas désillusionné " published on May 29, 2024. <https://www.actu-transport-logistique.fr/journal-de-la-marine-marchande/marches/construction-navale-dix-ans-apres-sa-strategie-made-in-china-2025-pekin-na-pas-desillusionne-906476.php>

<sup>10</sup> Thierry Duchesne, Director of the Maritime Department of the Fondation méditerranéenne d'études stratégiques (FMES) "Les nouveaux enjeux géopolitiques et maritimes de l'outre-mer français" in Diplomatie 129 September - October 2024. [https://fmes-france.org/wp-content/uploads/2024/12/d129\\_t-duchesne.pdf](https://fmes-france.org/wp-content/uploads/2024/12/d129_t-duchesne.pdf)

the Pacific islands through economic, diplomatic and military agreements, with island countries such as Kiribati, the Solomon Islands, Fiji, Tonga, Vanuatu and more recently the Cook Islands.

These agreements are part of China's efforts to exploit deep-sea mineral resources. This strategy is often detrimental to Australia and the United States, who have historically been influential in the region.

## Environmental and climatic challenges facing Polynesia's maritime areas



*The Great Pacific Garbage Patch (GPGP)*  
Caroline Power Photography

The Pacific Ocean faces major environmental challenges, not least plastic pollution. Every year, around 8 million tonnes of plastic are dumped into the oceans, much of it in the Pacific. This contributes to the formation of waste zones such as the **Great Pacific Garbage Patch**, located between California and Hawaii, which extends over some 1.6 million km<sup>11</sup>. Another pollution zone, **the South Pacific Garbage Patch**, between South America and Australia, covers around 2.6 million km<sup>2</sup>. This waste, made up of microplastics and chemicals, threatens marine ecosystems and the food chain, often with irreversible effects.

The threats posed by **climate change** exacerbate these challenges. Rising sea levels are weakening atolls and coral reefs, which are essential for biodiversity and coastal protection. Ocean acidification, due to the absorption of atmospheric CO<sub>2</sub>, affects coral growth and the health of marine ecosystems. Rising ocean temperatures also encourage extreme weather events, such as more intense and frequent cyclones, which threaten island habitats and their populations. These phenomena threaten the food security and livelihoods of communities dependent on marine resources.

French Polynesia, with its vast EEZ of almost 5 million km<sup>2</sup>, one of the largest in the world, plays a strategic role for France in military, economic and diplomatic terms. This territory is home to an exceptional biodiversity, including 84 atolls, the largest group of atolls in the world, which are threatened by rising sea levels.

Among the emblematic sites are **Rangiroa**, the second largest atoll in the world with a 1,446 km<sup>2</sup> lagoon, and **Fakarava**, classified as a biosphere reserve by UNESCO<sup>12</sup>. **Tetiaroa** atoll, once owned by actor Marlon Brando, has been transformed into an ecological reserve. **Makatea**, a raised atoll, was mined for phosphate from 1908 to 1966.

**Moruroa** and **Fangataufa**, the former sites of French nuclear tests, remain symbolic places steeped in history. In the case of Moruroa, the nuclear test residues are not stored in accordance with international standards, but remain trapped in the cavities created by the tests. Weakened, the volcanic and coral rocks create risks of radioactive migration towards the ocean<sup>13</sup>.

<sup>11</sup> See the National Geographic article detailing the scale of the Great Pacific Garbage Patch.

<https://www.nationalgeographic.fr/environnement/le-vortex-de-dechets-du-pacifique-nord-ferait-trois-fois-la-taille-de-la-france>

<sup>12</sup> Decision of 27 October 2006 of the International Coordinating Council of the Man and the Biosphere (MAB) Program. In 2022, the world network will comprise 738 biosphere reserves, including 22 transboundary sites, in 134 countries, designated according to common criteria. New sites are added to the network every year.

<sup>13</sup> CESEC report no. 139 of November 15, 2006 "State recognition of the rights of victims of French nuclear tests and their environmental, economic, social and public health impacts in French Polynesia".





## The economic and cultural stakes of Polynesia's maritime space

French Polynesia's marine resources are essential to the local economy, in particular fishing, pearl farming and blue tourism, which make sustainable use of marine areas. These resources are also at the heart of Polynesian cultural heritage. The Polynesians, famous navigators, explored and colonized more than 16 million km<sup>2</sup> of the Pacific, guided by their mastery of the ocean and their sacred boats, double-hulled canoes. The ocean, known as **Moana**, is seen as a sacred element, a vital link between the islands, the ancestors and nature. Traditional practices such as **Rāhui**, a temporary ban on exploiting natural resources, were intended to allow species to regenerate naturally, testifying to the Polynesians' respect for the environment and their expertise in conservation.

Finally, these multiple challenges underline the importance of adopting public policies that integrate marine conservation, climate impact mitigation and sustainable exploitation to preserve French Polynesia's vital marine ecosystems.

## Strategic vision for the future

The report also sets out a strategic vision for the future sustainable development of the Pacific Ocean. This vision is based on integrated and participatory governance, involving close collaboration between the various stakeholders, including local communities, governments and international bodies. Strengthening education and awareness-raising initiatives is also crucial to raising collective awareness and encouraging more responsible behavior towards the marine environment.

## Contribution to the 2025 Oceans Summit

- Co-organized by the governments of France and Costa Rica, **the Third United Nations Ocean Conference (UNOC 3) will be held in Nice, France, from 9 to 13 June 2025.**

The central theme of the UNOC, **"Accelerating action and mobilizing all actors to conserve and sustainably use the ocean"**, underlines the urgency of strengthening efforts to protect the ocean, seas and marine resources from a sustainable development perspective.

This conference aims to identify innovative solutions and promote concrete actions to achieve the objectives set by Sustainable Development Goal 14, entitled *"Life below water"*, which aims to conserve and sustainably use the oceans, seas and marine resources for sustainable development. It will also provide a platform for consolidating existing partnerships and creating new ones, to accelerate the implementation of ongoing processes contributing to the conservation and sustainable use of marine ecosystems.

The Conference will be preceded by three special events: the One Ocean Science Congress (4-6 June 2025, in Nice), the Blue Economy and Finance Forum (7-8 June 2025, in Monaco), and the Ocean Rise and Coastal Resilience Coalition Summit (7 June 2025, in Nice).

- Contribution of the Economic, Social and Environmental Council (EESC):

In an opinion entitled "Making the Third United Nations Conference on the Oceans a decisive step for the protection of the oceans" delivered in February 2025, the EESC identified several priorities for improving international governance of the oceans, in particular scientific coordination and the evaluation of international conventions. This conference is also an opportunity to speed up the adoption of key texts on ocean protection, such as fishing regulation and the fight against plastic pollution.

The EESC is calling for a paradigm shift that integrates social issues related to seafaring workers and strengthening scientific cooperation. The EESC's recommendations include effectively protecting marine areas, supporting for the moratorium on deep-sea mining, abolishing subsidies for illegal fishing and decarbonizing maritime transport. These measures are essential to preserving the oceans, which cover **71% of the planet** and **represent the largest carbon sink**.

- **Preparing for the United Nations Ocean Conference in French Polynesia:** Since November 6, 2024, French Polynesia has been preparing for its participation in the Third United Nations Ocean Conference. At this conference, French Polynesia is committed to:
  - Preserve its coral reefs and the health of its lagoons,
  - Strengthen scientific cooperation and knowledge acquisition about the deep seabed,
  - Promote its unique model for protecting marine areas and resources,
  - Put the ocean at the heart of its 2030 sustainable innovation strategy,
  - Demonstrate its ability to develop renewable marine energy.
- By contributing to this 2025 Ocean Summit, **the CESEC of French Polynesia** wishes to share its experiences and recommendations for sustainable ocean management.

This report builds on two previous CESEC self-assessment reports: a 2013 report entitled "The development of public beaches in French Polynesia: balancing essential exploitation and tourism development" and a 2015 report entitled "The future of French Polynesia and sustainable governance of its marine heritage".



The report reaffirms the importance of multilateral cooperation and dialogue between nations to meet the common challenges of preserving the oceans. It is a call to action to protect and enhance the Pacific Ocean, a treasure trove of biodiversity and a source of life for present and future generations.

## Objectives and presentation of the report

Firstly, it addresses the main environmental and climatic issues facing the Pacific Ocean and examines the economic and cultural challenges. Secondly, by recalling the initiatives undertaken in relation to Polynesia's marine heritage, CESEC proposes strategic perspectives and recommendations for the sustainable development of this marine heritage.

In conclusion, this report aims to provide a holistic, clear and pragmatic vision of the sustainable development of the Pacific Ocean, based on the example of the **Rāhui of French Polynesia, a true liquid continent**. The aim is to demonstrate that the preservation of our marine heritage and the responsible exploitation of its resources are not contradictory objectives, but complementary ones, to ensure a prosperous and sustainable future for this part of the world.







# **ENVIRONMENTAL AND ECONOMIC ISSUES RELATED TO FRENCH POLYNESIA'S MARINE HERITAGE**

# 01

## A. ENVIRONMENTAL AND CLIMATE ISSUES

### 1. UNIQUE MARINE BIODIVERSITY

The geographical isolation of French Polynesia, located in the South Pacific Ocean more than 5,500 kilometers from the mainland coast, combined with its great geomorphological diversity, has encouraged the development of many endemic species, with around 47 new species discovered every year<sup>14</sup>.

The warm waters of the region are home to exceptional marine biodiversity. The coral reefs are home to a wide variety of corals, fish, turtles, rays, sharks and other invertebrates. Since 2012, a sanctuary for the protection of sharks has been established throughout the EEZ. The Polynesian environmental code prohibits shark fishing, trade and any activity that harms these marine predators.

French Polynesia is also known for welcoming majestic humpback whales every year between August and October. Since 2002, the protection of all marine mammals has been guaranteed by a sanctuary covering its entire maritime area.

To date, 1,301 species of fish have been identified in the EEZ and inland waters of French Polynesia. The Society archipelago, the most studied, harbors the greatest diversity (915 species), followed by the Australs (738 species), Tuamotu (637 species), Marquesas (636 species) and Gambier (579 species).

On the scale of these archipelagos, the rate of endemic species is highest in the Marquesas and lowest in the Tuamotu. In the Pacific Ocean as a whole, the endemism rate in the Marquesas Islands (13.5% of fish species) is the third highest after the Hawaiian Islands (20%) and Easter Island (25%) (Planes et al. 2016). Of the 155 families listed throughout the EEZ of French Polynesia (Siu et al., 2017), three of them include more than 70 species: the Gobiidae (147), Labridae (87) and Muraenidae (72)<sup>15</sup>.

The lagoons and outer slopes are home to 1,038 species, with lower diversity in the west, an affinity with cold waters in the south, and high endemism and abundance in the Marquesas. Fresh waters are home to 27 species<sup>16</sup>.

### 2. THREATS

Pollution of the seas by a multitude of chemical products, and more specifically, plastics, as well as greenhouse gases, global warming, coastal acidification, and the over-exploitation of marine resources are all contributing to the disastrous state of our planet. There is talk of a sixth mass extinction, but the distinguishing factor from the previous ones is that  $\frac{3}{4}$  of the species that have disappeared have done so within a few million years, or even a few tens of thousands of years. Since 1900, the number of individuals per species has fallen by an estimated 20%<sup>17</sup> and biodiversity is collapsing 100 to 1000 times faster. Vertebrate populations dropped by 69% between 1970 and 2018, while 33% of coral reefs and more than a third of marine mammals are threatened.

Since 1500, an estimated 7.5% to 13% of species are thought to have disappeared<sup>18</sup>; and today, 41% of amphibians, 13% of birds and 26% of mammals are threatened with extinction worldwide (IUCN).

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<sup>14</sup> French Office for Biodiversity (OFB).

<sup>15</sup> Assessment of the ichthyofauna and ichthyological work carried out in French Polynesia in recent years - René Galzin, Morgan Antoine, Philippe Bacchet, Taiana Darius, Benoit Espiau, Mireille Harmelin - Vivien, Rakamaly Madi Moussa, Christophe Misséls, Georges Remoissenet, Vahine A. Rurua, Gilles Siu and Marguerite Taiarui - Fisheries Newsletter n°171 - May-August 2023.

<sup>16</sup> Ibid.

<sup>17</sup> Science et vie n°263 - October 2022.

<sup>18</sup> Biological reviews " Gowie, Bouchet: 6thextinction.



In addition to the management principles recommended in 1995 in Kuala Lumpur for the preservation of biodiversity, it should be noted that of the 5,000 marine protected areas (MPAs), only a tiny proportion have received different levels of protection. The rest were paper MPAs that did not contribute to protecting biodiversity (species, genes and ecosystems), nor to increasing biomass or replenishing marine species stocks.

Studies have shown that the effectiveness of biodiversity conservation in a given area is proportional to the degree to which the area is preserved and managed, in terms of regulations, surveillance capacity and scientific monitoring.<sup>19</sup>

## 2.A. CLIMATE CHANGE

### 2.A.a) *Climate risk assessment*

Climate risk refers to the vulnerability of individuals, communities or regions to the negative impacts of climate change.

This vulnerability varies according to factors such as geography, economic development, infrastructure, access to resources, capacity to adapt and resilience. Vulnerability reflects the potential damage that human or ecological systems could suffer because of climate change, including extreme events.

The main factors influencing vulnerability include land-use planning, economic activities, management of public services, protective infrastructures, demographic and economic household structures, public health, as well as biodiversity and natural ecosystems.

### 2.A.b) *State of knowledge on climate change in French Polynesia*

Several studies and pilot projects have been carried out in French Polynesia, to improve understanding of vulnerabilities to climate change and develop adaptation solutions, particularly in pilot sites such as Moorea and the Gambier Islands. Examples of these projects include INSeaPTION, RESCCUE and Futurisks.

Despite these initiatives, efforts remain fragmented, and the Polynesian Climate Change Observatory has yet to be established, although it was planned as part of the 2015–2020 Climate Plan.

In 2019, Météo France in French Polynesia produced a Climatological Atlas with a section devoted to the effects of climate change. While some institutions, such as the Polynesian Energy Observatory and the National Observatory on the Effects of Global Warming (ONERC), provide some information on greenhouse gas emissions and climate impacts, gaps remain. Recent projects, such as the one co-financed in 2023 by ADEME, the French ecological transition agency and the Pacific Fund, aim to explore the feasibility of a joint Pacific observatory.

### 2.A.c) *Greenhouse gases and climate risks in French Polynesia: retrospective and projections*

As an island territory, French Polynesia is particularly vulnerable to the impacts of climate change, in which greenhouse gas emissions (GHG) play a crucial role.

GHGs trap the heat emitted by the Earth, contributing to global warming. Emissions resulting from human activities, such as the use of fossil fuels, the chemical industry, transportation and urban development (roads, hotels, ports, marinas, housing estates), amplify the planet's natural greenhouse effect.

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<sup>19</sup> Greelong, Australia 2005.



We can observe :

- an increase in temperatures,
- climate change, including heatwaves, droughts and hurricanes of great intensity.

This rise in temperature leads to the melting of glaciers on land (Greenland, Antarctica, the Alps, etc.) as well as pack ice. The absorption of more heat by the pack ice, in turn, warms the ocean. Since the beginning of the industrial era in 1850, **the average global temperature has risen by 1.1°C**, and the Arctic ice pack has lost 75% of its summer surface area since 1979.

The warming of the oceans and atmosphere intensifies tropical cyclones and extreme rainfall, increasing the risk of flooding and coastal erosion.

Additionally, the thermal expansion of water caused by warming increases the oceans' volume. Consequently, **average sea levels are rising by more than 3.7 mm per year**. Since 1900, the total rise has been more than 20 cm, increasing the risk of submerging atolls and low-lying islands.

In addition, the absorption by the oceans of a significant proportion of the carbon dioxide (CO<sub>2</sub>) present in the atmosphere causes water acidification. Around 30% of anthropogenic CO<sub>2</sub> emissions are absorbed by the oceans, where this gas, when dissolved, forms carbonic acid. Since 1750, **the pH<sup>20</sup> of the oceans has fallen by 0.1 units, leading to a 30% increase in acidity**.

This acidification threatens corals, shellfish and crustaceans, disrupting the marine food chain and endangering fish and marine mammals. This phenomenon leads to **a significant loss of biodiversity**.

These phenomena jeopardize local economic activities such as fishing, pearl farming and tourism, while threatening food security and infrastructure. The situation is exacerbated by the dependence of local communities on natural resources, making adaptation and resilience even more crucial.

The territorial analysis carried out in 2022 as part of the French Polynesia Climate Plan (PCPF) 2030 highlights the main identified risks and what can be expected in French Polynesia:

#### *2.A.d) Global warming*

Although historical temperature data for **French Polynesia** is limited, the effects of climate change are already being felt. Météo France has recorded a general rise in the average temperature across the whole territory, reaching around **+1.1°C** since the middle of the 20th century.

**Worldwide**, since the reference period 1850-1900, the average temperature has risen by **1.11°C**. The last 8 years have been the warmest on record.

The IPCC is now proposing scenarios known as SSP (Shared Socio-economic Pathways), which have replaced the RCP (Representative Concentration Pathways) scenarios from its 6th assessment report. The most favorable scenarios limit global warming to less than 2°C, while the **most alarming scenario** (SSP5-8.5) predicts an **increase of almost 5°C by the end of the century**. In **French Polynesia**, projections based on models such as the Aladin model (available at [www.drias-climat.fr](http://www.drias-climat.fr)) indicate **similar trends**.

Projects such as CLIPSSA (Climat du Pacifique, Savoirs Locaux et Stratégies d'Adaptation - Pacific Climate, Local Knowledge and Adaptation Strategies) should provide a much more detailed analysis based on the diagnosis appended to the French Polynesia Climate Plan (PCPF).

<sup>20</sup> The **pH**, or "hydrogen potential", is a measurement that indicates the acidity or basicity of an aqueous solution. The average pH of the oceans is 8.1.



### 2.A.e) Cyclone risk and rainfall

The south-west Pacific, including French Polynesia, is one of the cyclone basins where cyclones form, although activity remains relatively low, with 35 events recorded between 1981 and 2010 within 250 km of the Polynesian coast. These events, concentrated mainly between December and February, cause significant material and human damage, such as cyclone Orama in 1983, with winds of up to 280 km/h. Cyclones cause destructive rainfall (flooding, landslides) and waves of up to 12 to 15 meters, aggravated by storm surge, which is particularly dangerous for low-lying atolls.

Cyclone activity is highly variable from one year to the next and has been declining for the past two decades, although climate projections point to **fewer but more intense cyclones** in the future. Annual rainfall, which is forecast to fall slightly with a more irregular distribution, could lead to more frequent droughts, affecting freshwater supplies and increasing the risk of flooding and bush fires. Rising sea levels, by infiltrating the water tables of low-lying islands, exacerbate these challenges for local water resources.

### 2.A.f) Rising sea levels

Sea level rise is influenced by natural and man-made causes, such as melting ice, thermal expansion of the oceans and regional factors such as ocean currents.

**Since 1990**, the overall rate of rise has reached **3.3 mm/year**, with local variations in French Polynesia, for example 2.9 mm/year in Tahiti.

Although the Polynesian islands show a degree of resilience, coastal erosion is on the increase, exacerbated by human development that disrupts natural processes.

In the future, sea levels are expected to continue rising, reaching several meters in extreme scenarios, threatening inhabited areas, vital infrastructure and atoll water resources.

**Projections** of sea level rise, although they appear to be limited to a few dozen centimeters by the end of the century, are in addition to other phenomena exacerbating Polynesia's vulnerability. Uncertainties also remain over the potential role of Antarctica, where destabilisation of the western ice cap could cause a rise of several meters. On a scale of several millennia, this rise in water levels will continue, potentially reaching :

- **2 to 3 meters** for global warming capped at **1.5°C**,
- **2 to 6 meters** for a warming of **2°C**,
- **19 to 22 meters** in a **5°C** warming scenario.

Measures such as Natural Risk Prevention Plans (PPR) and studies on erosion are underway, but more in-depth management is needed to anticipate these challenges.

### 2.A.g) Ocean acidification and temperature rise, coral bleaching and changes in lagoon ecosystems

Climate change is having a significant impact on marine and terrestrial ecosystems in French Polynesia, threatening their balance and the essential services they provide. In the oceans, acidification due to the increasing absorption of carbon dioxide is leading to a drop in pH, seriously affecting corals and shellfish, which depend on carbon ions for their formation.

Warmer waters also increase coral bleaching. **Coral destruction rates are at 80% with a rise in temperature of between 1.5°C and 2°C, and 99% with a rise in temperature of over 2°C.**

These reefs, essential to marine biodiversity, play a key role in coastal protection, food production and economic activities such as fishing and tourism, as well as being of crucial cultural and social importance to Polynesians. Coastal and wetland areas, such as atoll forests and marshes, are shrinking because of rising sea levels, making the situation even worse.

These disruptions also affect infrastructures, food resources and populations, increasing the risks of marine submersion, erosion and food insecurity. The FCPF predicts a **reduction of at least 50% in fishing capacity by 2100**, which would increase the risk of food insecurity.

The resilience of ecosystems, through protection and restoration efforts, is therefore essential to limit these consequences and preserve ecosystems for future generations.

#### *2.A.h) Effects on the Polynesian population*

Climate change has tangible repercussions, that are exacerbated by human activities such as overfishing, coastal urbanization and water pollution. According to the IPCC, the Pacific islands will suffer **from significant impacts to water, fishing, nutrition, health and infrastructure**.

If negatively impacted, key sectors such as pearl farming and tourism which are already vulnerable, will increase social inequalities.

In terms of health, extreme weather events lead to loss of life, psychological disorders and deteriorating health conditions, particularly affecting air and water quality, as well as the spread of disease.

Among these problems, **ciguatera** poisoning is a major concern. It is linked to the proliferation of the Dinoflagellate micro-alga *Gambierdiscus toxicus*, which is encouraged by the degradation of coral reefs. It affects island populations that depend on subsistence fishing. In addition to causing digestive, neurological and cardiovascular disorders, ciguatera curbs the consumption and marketing of reef fish. This limits the income of local fishermen and puts additional pressure on already vulnerable communities.

French Polynesia's economy is threatened by the effects of climate change on activities such as agriculture, fishing and tourism. Although it is difficult to put a figure on potential consequences, researchers at the University of French Polynesia (UPF) estimate that more intense natural disasters could significantly reduce tourism revenues.

The most vulnerable populations, who are often dependent on fishing and subsistence farming, are the first to be affected by these upheavals. Therefore, it is vital to adopt appropriate measures to reduce these impacts, preserve ecosystems, and protect the food security and economic resources of island communities.

### **2.B. POLLUTION**

Pollution, particularly from plastics and chemicals, seriously impacts marine flora and fauna. Measures to manage waste and reduce pollution are essential for protecting marine ecosystems. The presence of microplastics in the oceans is also an extremely worrying and growing problem for the marine food chain.

#### *2.B.a) Plastic pollution*

Plastic pollution in the Pacific Ocean is a major environmental problem, with alarming figures illustrating its scale :

It is estimated that there are between 75 and 199 million tonnes of plastic waste in the world's oceans,



with around 14 million tonnes entering the marine environment each year. The notorious "Great Pacific Garbage Patch" contains around 1.8 trillion pieces of plastic and spans an area the size of France and twice the size of Texas<sup>21</sup>.

Microplastics, which result from the degradation of plastics, are present at all levels of the marine ecosystem, affecting the food chain and marine species<sup>22</sup>.

Since the 1950s, more than 8.3 billion tonnes of plastic have been produced, only 9% of which has been recycled<sup>23</sup>. Each year, it is estimated that nearly 14 million tonnes of plastic waste enter the oceans, representing 2 to 3% of global production (460 million tonnes/year in 2019). The quantity accumulated since 1980 is thought to be over 150 million tonnes, with billions of microplastics circulating in the **5 waste vortices, including the North Pacific vortex**, which covers almost 1.6 million km<sup>2</sup>, 92.6% of which comes : Japan (33.6%), China (32%), South Korea (9%), the USA (6.5%), Taiwan (5%) and Canada (4.7%). With 1 million plastic bottles consumed per second, or 15 tonnes per second, forecasts predict that at this rate **there will be more plastic than fish in the ocean by 2050**<sup>24</sup>.

Plastics affect marine species, aquatic birds and coastal ecosystems. They disrupt natural habitats and introduce toxins into the food chain.

Efforts are underway to reduce this pollution, notably through research into alternative materials and awareness-raising campaigns. However, plastic waste management remains insufficient to counter the constant flow of production.

In its report "Towards an International Treaty on Plastic Pollution: Issues, Options and Negotiating Positions", the Economic, Social and Environmental Council (EESC) highlights the alarming figures for plastic pollution.

Every year, plastic production generates a considerable amount of waste. In 2019, of the 460 million tonnes produced, 353 million ended up as waste. However, only a tiny proportion of this was recycled: just 9%. A further 19% was incinerated, while almost half was sent to controlled landfill sites.

The oceans are particularly affected by this pollution. Today, **plastics account for 85% of marine waste**, and even the most isolated regions of the planet are not spared.

Henderson Island, although located in the large marine protected area of the Pitcairn Archipelago, is a sad example. Despite being uninhabited and remote from any major landmass, it is considered one of the most polluted places on earth. A 2015 study found that more than 38 million pieces of plastic litter its beaches, with a density of plastic debris never recorded elsewhere. Every day, between 3,500 and 13,500 new pieces of plastic waste wash up on its shores, carried by ocean currents.<sup>25</sup>

In essence, if no significant action is taken, the situation could worsen in the coming decades. According to projections put forward by the EESC, global plastic consumption could increase 2.5-fold by 2060, further exacerbating an already dire environmental crisis.

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<sup>21</sup> <https://www.rts.com/fr/blog/plastic-pollution-in-the-ocean-facts-and-statistics/>

<sup>22</sup> <https://www.surfsession.com/actu/environnement/la-pollution-plastique-enfin-chiffree-313234217/>

<sup>23</sup> The origins of marine pollution: Oceanopolis.

<sup>24</sup> World Economic Forum - 2016.

<sup>25</sup> Henderson 2024 Expedition - Plastic Odyssey.

## 2.B.b) Oil

Oil-related marine pollution is one of the most alarming impacts on ocean ecosystems. Every year, nearly **6 million tonnes** of hydrocarbons are spilled into the oceans, including 400,000 tonnes from deballasting and degassing operations. Offshore oil fields account for approximately 30% of global oil production, with an estimated extraction of 103 million barrels per day in 2024. This increases the environmental risks associated with these maritime activities.

## 2.B.c) Coastal urbanization and domestic wastewater

As the transition between land and sea is porous, **80% of marine pollution originates from land-based activities**. It is then transported to the oceans via rivers and coastal areas. Most of the pollution that occurs at sea is carried by water from land. The ecological state of this water is linked to human activities on land such as agriculture, industry and demographic pressure.

Domestic wastewater amounts to around 150 liters per day per inhabitant and contains organic, mineral and bacteriological pollutants. Water that runs off roads, parks lots and other artificial flat surfaces (roofs, concrete) can contain heavy metals, toxins, lead, zinc, hydrocarbons and mercury, as well as pesticides and endocrine disruptors.

In French Polynesia, the main causes of bathing water pollution at sea that have been identified are<sup>26</sup> :

- the absence of a public sewerage system in densely populated areas,
- discharges of highly polluted rainwater after runoff on the ground and terrigenous inputs after heavy rainfall,
- discharges of slurry from pig farms into rivers,
- illegal discharges of domestic and industrial wastewater into aquatic environments,
- dumping various types of waste and household refuse in rivers and on beaches,
- non-compliant discharges from certain on-site wastewater treatment plants.

French Polynesia's public maritime domain is under considerable pressure. Urbanization of the coastal strip is intensifying. At the same time artificialization exceeds 50% of the total coastline on several islands, such as Moorea<sup>27</sup>. Embankments, whether authorized or not, extractions, roads and various structures (pontoons, wharves, etc.) all contribute to this artificialization. Some lagoons are occupied by bungalows on stilts. In the Tuamotu Islands in particular, several pearl farming concessions and fish farms are located in the lagoons.

The main source of alteration and degradation of the lagoon environment is coastal infilling in the fringing zone. This pressure is exacerbated by irregular occupation, as in Raiatea, where over 200,000 m<sup>2</sup> of the maritime domain is used without authorization, often for housing or pontoons<sup>28</sup>.

The impacts are serious: privatization of coastlines, destruction of fringing reefs that are essential to ecosystems, pollution of lagoons by untreated wastewater encouraging growth of algae, and the disruption of marine currents, which modifies sediments and impoverishes lagoons.

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<sup>26</sup> Catherine GABRIE - Héloïse YOU with the collaboration of P. FARGET - The state of the environment in French Polynesia.

<sup>27</sup> Aubanel A. 1993 " Valeurs socio-économiques du milieu corallien récifal et de ses ressources ; application à une île océanique du Pacifique Sud : Moorea, archipel de la Société ", published in Bulletin de la Société des Etudes Océaniques n°263-264, tome XXIII, n°1-2, July-September 1994, p.65-105.

<sup>28</sup> Source: Direction des affaires foncières.



### 2.B.d) The problem of drifting fish aggregating devices (FADs)

**Drifting Fish Aggregating Devices (FADs), which are strictly prohibited in the EEZ of French Polynesia, are floating rafts used by tuna seine fisheries outside the EEZ of French Polynesia.** More than 50,000 are deployed each year in the Pacific. Fitted with satellite buoys and echo sounders, they attract schools of tuna but, as they drift towards prohibited areas, they are often abandoned, causing pollution, trapping protected species and affecting the migratory behavior of many marine species.

**Deployed to the east, outside the Polynesian EEZ, these drifting FADs are then carried westwards by the trade winds, guiding the schools of tuna out of the EEZ where the purse seiners make their catches.**

Between 2014 and 2019, 250 to 350 purse seiners operated in the Western and Central Pacific Fisheries Commission (WCPFC<sup>29</sup>) area, with catches varying between 2 and 2.3 million tonnes, with catches per seiner ranging from 3,000 to 9,000 tonnes/year for super seiners, i.e. more than the total production of artisanal and semi-industrial fishing.

To limit these impacts, the Marine Resources Department (DRM) has been conducting research since 2019 with the University of French Polynesia and the IRD to model the course of drifting FADs and improve the monitoring of stranding events. In 2021, a pilot program in the Tuamotu Islands collected more than 600 satellite buoys and assessed the density of stranding events.

French Polynesia is working with the South Pacific Community (SPC) to identify stranded drifting FADs and to raise awareness among tuna regional fisheries management organizations (WCPFC, IATTC<sup>30</sup>). These bodies are beginning to limit the number of active drifting FADs per seiner and to encourage biodegradable alternatives.

Despite these efforts, measures remain insufficient to prevent stranding events and protect coral reefs. French Polynesia is proposing increased monitoring and regulation, taking an active part in international discussions and encouraging actions similar to those implemented in the Indian Ocean. **CESEC calls for a total ban on this type of fishing gear, which is extremely devastating for species, ecosystems and biodiversity.**



*Fish aggregating devices (FADs) in the Indian Ocean in 2016 · ©WILL ROSE/GREENPEACE - Dans Le Monde*

<sup>29</sup> Western and Central Pacific Fisheries Commission.

<sup>30</sup> Inter-American Tropical Tuna Commission.





Drifting DCP beached at HAO · 📷 Tahiti Infos

## 2.C. OVERFISHING

According to the United Nations Food and Agriculture Organisation (FAO), overfishing, or the overexploitation of bioaquatic resources, refers to excessive fishing activity that **exceeds the capacity of marine resources to renew themselves**<sup>31</sup>. This leads to a decline in fish populations, compromising their reproduction and the balance of marine ecosystems.

Several factors are contributing to increasing pressure on fish stocks. Global population growth and strong demand for seafood products have often led to the over-exploitation of marine resources.

**In 2022, world fish production** reached a record **223.2 million tonnes**, of which 185.4 million tonnes were destined for human consumption. **Average per capita consumption has more than doubled** in six decades, rising **from 9.1 kg in 1961 to 20.7 kg in 2022**<sup>32</sup>. FAO and OECD projections<sup>33</sup> indicate a steadily rising demand for fish, increasing the pressure on these resources<sup>34</sup>.

**Technological advances (sonar, radar, winches, freezing) and the development of bottom trawling and seining have intensified fishing, leading to unsustainable levels of exploitation.** These techniques have a direct impact on fish stocks and damage marine habitats. Trawling in particular, destroys the seabed, making it difficult, if not impossible, for fish populations to regenerate.

**In French Polynesia, fishing methods such as seining are strictly prohibited within the EEZ**, reducing the direct impact on local resources. However, its **proximity to the tuna belt**<sup>35</sup> **in the Pacific**, an area particularly rich in tuna, exposes Polynesian stocks to the effects of seine fishing by large fleets operating on the high seas with drifting FADs.

In 2021, only 62.3% of marine fish stocks were fished in a biologically sustainable manner, compared with 64.6% in 2017<sup>36</sup>. Inadequate resource management is exacerbating this problem. Around 47% of major inland fishing basins are under low pressure, while 13% are heavily exploited, compromising their sustainability. In many cases, laws are inadequate or poorly enforced, encouraging illegal

<sup>31</sup> Article 6.4 of the Code of Conduct for Responsible Fisheries adopted by the FAO Conference at its twenty-eighth session in Resolution 4/95 of 31 October 1995.

<sup>32</sup> FAO - The State of World Fisheries and Aquaculture 2024 - Blue transformation in action.

<sup>33</sup> Organisation for Economic Co-operation and Development.

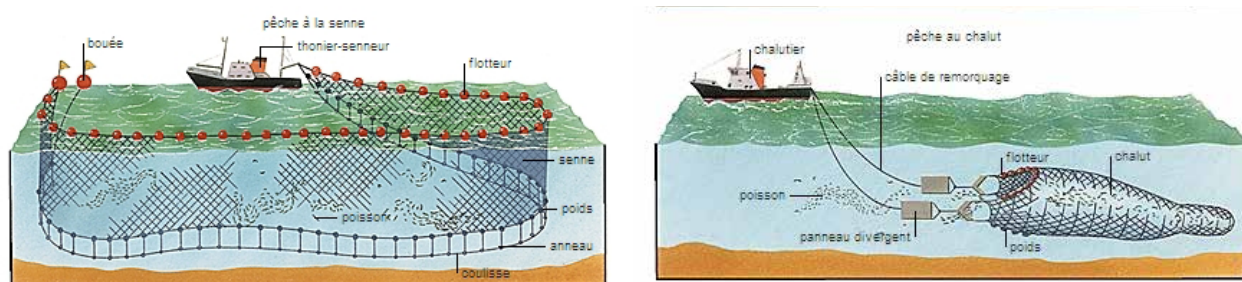
<sup>34</sup> FAO - The State of World Fisheries and Aquaculture 2020 - Sustainability in action.

<sup>35</sup> A tuna belt stretching between 15°N and 15°S, where 60% of the world's tuna is caught (2.5 million tonnes).

<sup>36</sup> FAO - The State of World Fisheries and Aquaculture 2024 - Blue transformation in action.

or undeclared practices. Subsidies destructive fishing (using dynamite, cyanide, gillnets, drifting FADs, bottom trawling) are helping to intensify over-exploitation in already fragile areas. What's more, international waters are beyond national jurisdiction and remain vulnerable to this type of uncontrolled and illegal exploitation.

Thus, overfishing represents a complex challenge combining environmental, social and economic issues. **Although French Polynesia is committed to the sustainable management of its own tuna resources, it remains exposed to the pressures exerted in its immediate vicinity, requiring international cooperation to preserve marine stocks and ecosystems on a wider scale.**



Seine fishing, Trawl fishing · LAROUSSE Encyclopedia

## 2.D. THE ROLE OF ECOSYSTEM SERVICES

Although the planet is called "Earth", this name does not reflect its geographical reality, where the ocean largely dominates, covering around 70% of its surface, or 361 million km<sup>2</sup> for a volume of water of 1.332 million km<sup>3</sup>. The world's largest ecosystem, the ocean remains largely unknown, especially its abysses, which could be home to up to a million species as yet unidentified by science. This lack of knowledge underlines the urgent need to develop scientific research to gain a better understanding of this essential universe<sup>37</sup>.

The ocean plays a vital role in the planet's equilibrium: it provides a main source of protein for almost three billion people, produces around 50% of the Earth's oxygen and is a reservoir of precious resources, particularly energy and medical resources, thanks to the molecules derived from marine biodiversity.

In addition to its resources, the ocean also plays an essential role in regulating the world's climate, a role that is even more crucial given the acceleration of global warming. Preserving the oceans is therefore essential for the health of our planet and the living beings that depend on them.

The marine ecosystems of French Polynesia, including coral reefs, lagoons and unique marine species, play a vital role in maintaining global biodiversity and the biogeochemical cycles essential to life on Earth. They represent around of the total surface area of the Pacific Ocean and are an exceptionally well-preserved, little-exploited refuge zone.

The coral reefs, lagoons, fish species, turtles and many other forms of marine life that inhabit Polynesian waters constitute an exceptionally rich ecosystem. These ecosystems are not only essential for maintaining global biodiversity, but also for stabilizing global ecological and climatic processes. They provide vital ecosystem services such as coastal protection against erosion, water filtration and nutrient cycling.

<sup>37</sup> Article "Fishing, pollution and rising temperatures: how marine science can help us save the ocean" by Renault Anne. Anne has a PhD in condensed matter physics and joined the CNRS as a research fellow in the CNRS physical spectrometry laboratory in Grenoble.  
<https://archimer.>

### 2.D.a) Climate control

Marine ecosystems, particularly coral reefs in French Polynesia, act as natural carbon sinks. They absorb and store carbon dioxide, helping to mitigate the effects of climate change. The oceans also regulate global temperature by redistributing heat through ocean currents.

### 2.D.b) Coastal protection

Coral reefs form a natural barrier that protects coasts from erosion and waves, particularly during storms and cyclones. This protection reduces the impact of extreme weather events on coastal infrastructures and local communities.

### 2.D.c) Food resources

Marine ecosystems provide a large proportion of the food resources in French Polynesia, particularly through fishing and aquaculture. Coral reefs and lagoons are home to a rich biodiversity that supports local populations by providing essential proteins and livelihoods.

These services are essential for the resilience of local communities in the face of climatic and economic challenges. Preserving them is therefore essential to guarantee a sustainable future for French Polynesia.

## B. ECONOMIC AND SOCIOECONOMIC ISSUES

French Polynesia's marine resources support several key sectors of the local economy. The fishing, pearl farming and blue tourism sectors depend closely on the health and sustainability of these resources. Fishing is a major source of income and employment for local communities. Meanwhile pearl farming, particularly the production of Tahitian cultured pearls, is an iconic economic activity in the region. Tourism, based on the beauty of the seascapes and the diversity of the flora and fauna, also makes a significant contribution to economic development.

## 1. THE ECONOMIC VALUE OF FRENCH POLYNESIA'S MARINE RESOURCES

### 1.A. THE ROLE OF AQUACULTURE, FISHING AND TOURISM IN THE LOCAL ECONOMY

#### 1.A.a) The pearl farming industry in particular

Tahitian cultured pearl farming<sup>38</sup> is emblematic of the region, contributing to the local economy and to Polynesia's international image. Exports of Tahitian cultured pearls account for a significant proportion of commercial revenue. At the same time, pearl farming promotes local know-how that has been handed down through the generations.

In 2023, pearl farming was **French Polynesia's second most important resource**, just after tourism, accounting for 76% of revenue from the export of local products<sup>39</sup>. Tahitian cultured pearls were very popular internationally that year, with exports tripling to 17 billion F CFP in one year. The average export price was nearly 1,000 F CFP/gram, a figure not seen in 15 years.

<sup>38</sup> Name taken from article LP 3 of Loi du Pays no. 2017-16 of 18 July 2017.

<sup>39</sup> Report of the Institut d'Émission d'Outre-Mer (IEOM) 2023.





Pearl farming is developing on around fifteen islands and atolls in the Tuamotu archipelago (accounting for 70% of production), and the Gambier archipelago (accounting for 26%). Pearl farms operate under occupation permits issued by public authorities that set specific production ceilings for each island to maintain economic and environmental balance. Since late 2022, production has also been governed by quotas of 2,500 marketable pearls per hectare.

Two thirds of the 9.2 million raw pearls produced in 2023 came from the Tuamotu, primarily from Arutua (24%), Apataki (10%) and Ahe (10%). 25% were from the Gambier Islands and 7% from the Leeward Islands.

That same year, the Marine Resources Department (DRM) counted 505 operators, including 412 mother-of-pearl collectors and 325 Tahitian cultured pearl producers. However, their numbers had been falling since 2019 (-81 in 2023, nearly -190 over 4 years), due to stricter criteria for the allocating professional cards to optimize the use of surface areas.

Regarding spat, only a few Tuamotu atolls (Takapoto, Ahe, Takume and Katiu) supply producer islands, as natural collection is impossible in some lagoons. Initiatives such as reseeded in Mangareva and a hatchery at Fakarava to offset the scarcity of wild naces have not yet been implemented.

Finally, the international marketing of Tahitian cultured pearls is equally shared between producers and vendors.

The pearling industry faces **several major challenges**, including **a persistent shortage of grafters**, an ongoing issue since the onset of the Covid-19 crisis, and some fear that the current rise in demand may be short-lived.

Additionally, the **environmental impact of pearl farm waste** remains a major concern. Since 2014, several programs have assessed the accumulated pearl farm waste deposits on land and in lagoons, such as RESCUE 2 (2014-2018) and IFREMER's Microlag (2017-2020). These studies have revealed a concerning presence of microplastics in lagoons and even within the pearl oysters themselves.

Pearl farms produce various types of waste, such as :

- ropes, collectors and buoys used to cultivate pearl oysters;
- plastic netting used to protect pearl oysters.

This waste is often made from non-biodegradable materials and has accumulated in lagoons or on adjacent land. It threatens the marine and terrestrial environment and is now transported to Tahiti for treatment. However, extracting and transporting the waste to specialized centers, such as the one in Tahiti, is costly (around one million CFP francs per tonne), which is a significant burden for producers.

Many islands and atolls do not have appropriate treatment centers, limiting the options for effective waste management.

Finally, **maintaining high quality standards and differentiating itself on the world market** is a crucial challenge for the Polynesian pearl farming sector, in a context of international competition and changing consumer expectations.

Tahitian cultured pearls enjoy a reputation for excellence. To preserve this image, it is essential to ensure that production meets rigorous quality criteria (size, luster, shape and color). This requires optimal cultivation practices, strict control at every stage of the process (from breeding to harvesting) and reinforced environmental monitoring to guarantee the health of the lagoons and pearl oysters as part of the good practice charter<sup>40</sup>.

On the world market, other producing countries, such as China and the Philippines, are flooding the market with pearls often at lower prices. Although these products are different in terms of their characteristics, they may turn off some consumers who are less aware of the quality and authenticity of Tahitian cultured pearls. French Polynesia therefore needs to position itself as a top-of-the-range producer.

To stand out on the global market, the Polynesian pearl industry can rely on several unique factors: the rarity and controlled origin of Tahitian cultured pearls, the professionalism of those involved in the industry, and a commitment to sustainable production that respects the environment (nucs from organic resources).

Consumers are increasingly looking for ethical and sustainable products. It is becoming essential for stakeholders in the industry to demonstrate their environmental and social responsibility, for example through initiatives to preserve lagoon ecosystems or pearl farming waste recycling practices. To address this, an obligation to manage waste was introduced in 2017<sup>41</sup> for all pearl farmers submitting a request to obtain a new affiliation card or its renewal (every 5 years).

### *1.A.b) Fishing and aquaculture*

#### *1.A.b.1) The fishing sector*

##### *1.A.b.1.a) The economic importance of the fishing industry*

Fishing is a major activity for the Polynesian subsistence economy, particularly the tuna industry. French Polynesia has immense fishing potential thanks to its vast EEZ. **In 2023, fishing production nearly reached 11,100 tonnes** (compared with 9,832 tonnes in 2022), mainly due to a significant increase in offshore catches<sup>42</sup>.

##### *1.A.b.1.b) Deep-sea fishing*

In 2023, deep-sea fishing in French Polynesia reached 8,700 tonnes (+15% year-on-year) out of an authorized quota of 14,000 tonnes<sup>43</sup>. This increase, concentrated on albacore tuna, is mainly destined for the local market. Around 1,200 tonnes are exported to the USA and Europe.

Faced with these difficulties, producers are looking to diversify their products (preserves, rillettes, breaded fish) to stimulate demand. However, there are other obstacles: rising fuel and bait costs, costly vessel maintenance, increased financial charges and the possible impact of the reform of the fishermen' status. The industry also points to a lack of qualified personnel, cumbersome administrative procedures and restrictions linked to the expansion of protected maritime zones.

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<sup>40</sup> This charter includes points from the specifications set out in law 2017-16 of 18 July 2017, and the membership card is valid for 2 years. The first memberships to this charter date back to 2023.

<sup>41</sup> Loi du Pays n°2017-16 of 18 July 2017.

<sup>42</sup> Report of the Institut d'Emission d'Outre-Mer (IEOM) 2023.

<sup>43</sup> WCPFC, it being specified that the French Polynesia deep-sea fishing sector policy 2018-2022 approved by deliberation n°2018-6 APF of 13 March 2018, 14,000 tonnes constitutes a "total sustainable catch level".



### *1.A.b.1.c) Inshore fishing*

In 2023, the inshore fishing fleet in French Polynesia comprised 354 vessels, including 330 poti marara and 27 bonitiers. Annual production is estimated at 2,400 tonnes of fish, an increase of 5%. Of the total catch, the predominant species is tuna, followed by bonito (20%), mahi-mahi and marlin.

This fishery meets the needs of the local market, either by supplying shops and restaurants, or by self-consumption. It is also supported by the program to anchor fish aggregating devices, piloted by the Marine Resources Department, which will have 116 active units spread across the five archipelagos by the end of 2023.

### *1.A.b.1.d) Lagoon fishing*

Fishing in the lagoon, mainly for self-consumption, is an essential food resource for a large part of the population. It is mainly based on the use of traditional traps. Annual production is estimated at 4,300 tonnes, consisting mainly of lagoon fish (80%), followed by small pelagic fish (15%) and seafood such as clams, crabs and lobsters (5%).

### *1.A.b.1.e) Exports*

In 2023, exports of Polynesian fishery products reached 1,780 tonnes (+5% year-on-year) worth 2.3 billion CFP francs.

Nearly 90% of exports are destined for the United States and some for Japan, mainly in the form of fresh whole fish, while most of the rest is shipped to France conditioned as frozen meat and fillets.

### *1.A.b.1.f) Challenges and opportunities for the fishing industry*

The industry is facing market challenges. The increase in catches, especially albacore tuna, is leading to saturation of the local market, causing a build-up of stocks and downward pressure on prices.

In addition, the sector is trying to diversify its markets for large big eye and yellowfin tuna towards Asia and Canada, but is encountering logistical and administrative obstacles, particularly when it comes to health certifications.

**A major advantage for exports is the MSC Sustainable Fishing label, obtained in 2018 for tuna (renewed until the end of 2024) and in 2021 for swordfish, which highlights the sustainability of Polynesian fishing practices.**

The main challenge of the Polynesian fishing industry is the sustainable management of coastal marine resources. French Polynesia has a unique and precious marine biodiversity. However, several factors make preserving these resources complex, such as the overexploitation of stocks outside the EEZ by super seiners and drifting FADs, climate change and illegal fishing practices.

### *1.A.b.2) Aquaculture*

In French Polynesia, aquaculture remains a marginal activity apart from pearl farming. Initiated in the 1970s, it focuses mainly on shrimp farming, fish farming of platax (paraha peue) and the farming of molluscs such as clams. Ambitious projects are also being developed for other species and sectors, such as holothurian<sup>44</sup>, oyster and seaweed farming.

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<sup>44</sup> Used to describe the farming of holothurians, better known as sea cucumbers (rori in Tahitian).

Producers, grouped together within the *Coopérative des Aquaculteurs de Polynésie française* (CAPF), French Polynesia Cooperative of aquaculture professionals, manage shrimp and fish hatcheries financed by the local government, called "VAIA" Pôle Aquacole located in Vairao (Tahiti). This center also includes a Technical Aquaculture Centre (CTA), dedicated to research and development under the supervision of the Marine Resources Department. In addition, a vast "biomarine zone" is being set up in Faratea (East Taïarapu, Tahiti) to stimulate aquaculture activities and encourage new projects.

In 2023, blue shrimp production in French Polynesia decreased by 43% reaching 86 tonnes. This decline was primarily due to massive larval mortality caused by deteriorating water quality. Consequently, sales dropped to 200 million F CFP down from 350 million in 2022. Locally farmed shrimp cover around 60% of domestic demand, while frozen imports fill the remaining gap<sup>45</sup>.

In fish farming, paraha peue (*platax orbicularis*) farming, developed since the 1980s, stabilized at 11 tonnes in 2023 despite high fry mortality, after reaching a record 24 tonnes in 2017. Clam farming for aquarium purposes is based on the collection of postlarvae in Reao and produces 5 to 6 tonnes per year. Most of these clams are exported to the United States, and revenues decreased by 15%, from 35 million F CFP in 2022 to 30 million in 2023<sup>46</sup>.

### *1.A.b.3) The blue tourism sector*

#### *1.A.b.3.a) A key economic lever based on the attractiveness of the lagoons, coral reefs and seascapes (flora and fauna)*

Tourism, which focuses mainly on marine activities such as diving, whale watching and exploring the lagoon, plays a central role in the Polynesian economy.

In 2023, tourist numbers surpassed pre-Covid-19 pandemic levels, reaching a record **261,800 visitors**, of which nearly half were from the United States. This influx provided a major boost to the hotel sector, as did the cruise industry departing from French Polynesia, which also surpassed its pre-pandemic activity with a total of 1,360 calls, an increase of 36% in just one year<sup>47</sup>.

These activities are significant for the local economy: in 2023, they accounted for around **one-fifth of salaried employment** (i.e. 13,150 people), 15% of businesses (i.e. 5,200) and 17% of total declared sales, reaching 95 billion F CFP.

In 2024, with 263,766 tourists<sup>48</sup>, declared sales are just over F CFP 100 billion.

French Polynesia's multitude of islands and atolls provides the perfect backdrop for the development of maritime tourism. This sector offers a wide range of opportunities, from cruises, whether local or transoceanic, to yachting and sailing, whether for visitors or via local charters.

#### *1.A.b.3.b) The cruise industry*

In 2023, the global cruise industry attracted 31.7 million passengers, exceeding pre-pandemic levels, except in Asia and the Pacific. In French Polynesia, business grew with 43,800 cruise passengers departing from the territory (+5% year-on-year) and 43,900 transpacific cruise passengers passing through, although the latter figure remains lower than in 2019.

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<sup>45</sup> IEOM 2023 report.

<sup>46</sup> Ibid.

<sup>47</sup> IEOM 2023 report.

<sup>48</sup> ISPF..





Annual economic benefits are estimated at 15.5 billion F CFP, including jobs, tourist services and port activities<sup>49</sup>.

Three companies operate locally all year round: Aranui Cruises, Ponant and Windstar, with a total of 730 calls in 2023, plus other seasonal ships. A total of 1,360 stopovers have been recorded in French Polynesia, a record, involving some forty islands.

Finally, it should be noted that since 2022, French Polynesia has restricted access for ships with more than 3,500 passengers and favored those with fewer than 500 passengers, encouraging controlled tourism on most islands such as Bora Bora.

#### *1.A.b.3.c) Yachting*

The yachting sector is particularly active in French Polynesia, with a fleet of 94 yachts and motorboats, managed by 25 companies in 2023. Most of these vessels are located in the Leeward Islands. The economic spin-offs for this sector reached 15.2 billion F CFP that same year<sup>50</sup>.

Every year, around 700 international pleasure boats sail in Polynesian waters, welcoming almost 2,900 passengers. French Polynesia is also a magnet for luxury yachts, with around twenty units expected to be registered by 2023. Passengers on these ships make a significant contribution to the local economy, according to estimates made before the pandemic.

#### *1.A.b.3.d) The major challenge of ecotourism*

The development of ecotourism in French Polynesia is of crucial importance, especially as the territory aims to double the number of visitors over the next ten years, with a target of 600,000 tourists. This growth calls for a responsible approach to preserving fragile ecosystems while meeting the expected increase in tourist flows. Ecotourism could play a key role in achieving this balance, reconciling economic expansion, environmental conservation and the enhancement of local cultures.

### **1.B. PORT INFRASTRUCTURE AND MARITIME TRANSPORT**

#### *1.B.a) The importance of port infrastructure*

Port infrastructures play a fundamental role in French Polynesia, an isolated territory in the heart of the Pacific. They are essential for importing goods, 99% of which transit by sea, and for redistributing goods to the five archipelagos<sup>51</sup>. The **port of Papeete**, described as an **"economic lung"** and **logistics hub**, is at the heart of this activity, handling **more than one million tonnes of goods by 2023**, 82% of which will be foodstuffs, and 92% of which cover hydrocarbon needs.

French Polynesia imports almost all its requirements via the port of Papeete, making it a vital infrastructure for the population and businesses. It also hosts cruise ships, contributing to the development of tourism, a key sector of the local economy. The infrastructure maintains links between the islands, facilitating the transport of goods and passengers.

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<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

<sup>51</sup> Cluster Maritime de Polynésie française, ISEMAR - "Polynesia: what are the challenges for maritime infrastructures? - June 2024.

### *1.B.b) International maritime freight*

In 2023, cargo landed at the Port of Papeete reached 946,000 metric tonnes, representing the bulk of goods. It was split between hydrocarbons (45%), containerized goods (44%), dry bulk, mainly cement (10%), and vehicles (1%). However, the overall volume fell by 6.9% compared with the previous year, with marked declines for hydrocarbons (-7.9%), containers (-5.5%) and dry bulk (-9.1%), with the exception of cement, which rose slightly (+0.5%). This trend reflects the fall in imports of energy goods (-4.5%) and intermediate goods (-8.8%)<sup>52</sup>.

Shipped freight, representing only 3% of the total, reached 28,000 metric tonnes in 2023, down 16% on the previous year, mainly due to lower exports of copra oil (-30%) and noni (-34.4%).

### *1.B.c) Inter-island services*

The inter-island shipping service is vital for maintaining links between the five archipelagos and ensuring supplies to remote islands. In 2023, 20 ships were in service carrying freight and passengers. The volume of inter-island freight reached 461,481 tonnes, up from 451,004 tonnes in 2022<sup>53</sup>. Two new vessels, the *Hava'i* and the *Apetahi* Express, were brought into service, boosting transport capacity. However, the inter-island fleet is still ageing, with almost 40% of ships over 40 years old. This leads to frequent breakdowns, disrupting supplies to the islands.

### *1.B.d) The challenges and issues of maritime infrastructure and transport*

Changes in international maritime transport, the crucial importance of inter-island connections, and the ambition to develop ship maintenance and optimize infrastructure management are among the major challenges facing maritime facilities in French Polynesia today. Added to this is the need to rebalance development in favor of the archipelagos, notably through a policy of decentralization, while ensuring efficient management of yachting flows.

To meet the growing demands of international and inter-island freight, it is essential to adapt the ports to changes in maritime traffic. The current infrastructure, in particular the International Trade Terminal (ITT), is considered undersized to absorb the expected growth in the volume of goods. In addition, Polynesia's remoteness from the main shipping routes means that it is not very attractive for shipping companies, with higher logistics costs.

In addition, ports must face challenges posed by ecological transition, specifically following new environmental standards and adapting to technological developments, such as new modes of ship propulsion. The introduction of sustainable practices, such as the dematerialization of documents via the REVATUA teleservice, is part of this modernization drive.

In addition, it is essential to rebalance development in favor of the remote archipelagos to reduce economic disparities. This will require a better distribution of investment and a proactive policy of decentralization.

Finally, managing the flow of pleasure craft is another major challenge. The lack of suitable infrastructure, such as modern marinas and equipped mooring areas, leads to a few difficulties. Yachtsmen often prefer unregulated moorings close to urban areas or in sensitive ecosystems, which leads to :

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<sup>52</sup> IEOM 2023 report.

<sup>53</sup> Press release dated 6 August 2024 "Status and outlook for inter-island shipping services" and Atlas 2023 of French Polynesia's shipping routes.

- increased pressure on the environment, with the risk of damaging the seabed and reefs ;
- tensions with local residents, due to visual and noise nuisance, as well as the perception that these areas could be put to other uses ;
- limited economic spin-offs, as yachtsmen using these moorings generally avoid the costs associated with port facilities ;
- increased risks to maritime safety, with the absence of dedicated, well-equipped areas encouraging poorly placed anchorages and increasing the likelihood of accidents or conflicts between ships.

## 1.C. THE POTENTIAL OF MARINE RESOURCES

French Polynesia has a wealth of marine resources, including undersea minerals, biotechnologies and renewable energies.

### 1.C.a) Underwater minerals

The Polynesian seabed is home to valuable mineral resources, including:

- Polymetallic nodules: These metal-rich formations are found in the abyssal plains and contain manganese, nickel, cobalt and copper. These metals are essential for modern technologies such as batteries and renewable energy sources.
- Polymetallic crusts: Found on seamounts, these crusts contain rare metals such as cobalt and rare earth elements, which are essential for the electronics and aerospace industries.
- Hydrothermal sulfides: These deposits, located around hydrothermal vents, contain precious metals such as gold, silver and zinc.
- Deep sedimentary muds rich in rare earth elements: These muds, identified in the Pacific by researchers such as Yasuhira Kato from the University of Tokyo, contain high concentrations of rare elements and yttrium (REY), which are essential for modern technologies such as batteries, screens and medical equipment.
- Promising potential for harnessing natural hydrogen.

However, exploiting these resources poses major environmental challenges. Seamounts, for example, play a crucial role in marine ecosystems as oases of biodiversity. Any mining activity could disturb these sensitive habitats, necessitating in-depth impact studies and strict regulations.

In 2016, the Institut de Recherche pour le Développement (IRD), a French public research organization drew up an inventory of deep-sea mineral resources in the Polynesian EEZ as requested by the local government of French Polynesia. The report highlights the immense economic potential of polymetallic nodules, crusts and hydrothermal sulfides, while warning of the environmental risks associated with their exploitation. The study recommends a cautious approach, based on scientific exploration campaigns, the development of appropriate technologies and participatory governance. It also stresses the need to reconcile economic exploitation with the preservation of marine ecosystems, taking into account French Polynesia's specific social and environmental characteristics<sup>54</sup>.

### 1.C.b) Marine biotechnologies

French Polynesia's exceptional marine biodiversity offers immense potential for biotechnology :

- Marine organisms, such as sponges, corals and micro-algae, produce bioactive molecules that can be used to develop drugs for treatment of cancer, infections and inflammatory diseases. These resources are also used in innovative cosmetic products.

<sup>54</sup> IRD, Deep-sea mineral resources in French Polynesia / Les ressources minérales profondes en Polynésie française. Expertise collégiale - Le Meur, Pierre-Yves, et al, editors. IRD Éditions, 2016, <https://doi.org/10.4000/books.irdeditions.9540>.



- Enzymes extracted from marine organisms can be used in industrial applications such as degrading plastics or producing biofuels.
- The diversity of Polynesian marine ecosystems, ranging from coral reefs to the deep sea, provides a natural laboratory for scientific research, including the study of biological adaptations and ecological interactions<sup>55</sup>.

### 1.C.c) Marine renewable energy

In French Polynesia, various solutions have been explored for several years to diversify the energy mix and reduce dependence on fossil fuels. Among these technologies, SWAC (Sea Water Air Conditioning) and OTEC (Ocean Thermal Energy Conversion) stand out.

**SWAC uses cold water from the depths of the sea to cool buildings, thereby reducing electricity consumption for air conditioning.** This technology is already in place in several infrastructures in Polynesia, including the French Polynesia Hospital Center, The Brando hotel and the Intercontinental Resort in Bora Bora. It significantly reduces energy consumption and CO<sub>2</sub> emissions.

**OTEC exploits the temperature difference between surface water and deep water to produce electricity.** Although the technology is still in the development phase, local company Airaro says it is ready to launch its first commercial production unit. An installation could provide for 8% of Tahiti's electricity needs.

French Polynesia's marine environment is ideal for the development of renewable energies. Thanks to this natural resource, OTEC could contribute to achieving a 50% share of renewable energy in the territory's energy mix. SWAC represents a sustainable alternative to traditional building cooling solutions.

However, several challenges need to be overcome to ensure the success of these technologies. The cost of infrastructure and maintenance remains high, which may slow down large-scale deployment. In addition, the installation of production units could have an environmental impact on coral reefs, an essential part of Polynesia's marine ecosystem. The reliability and profitability of long-term projects also require in-depth studies to ensure their viability.

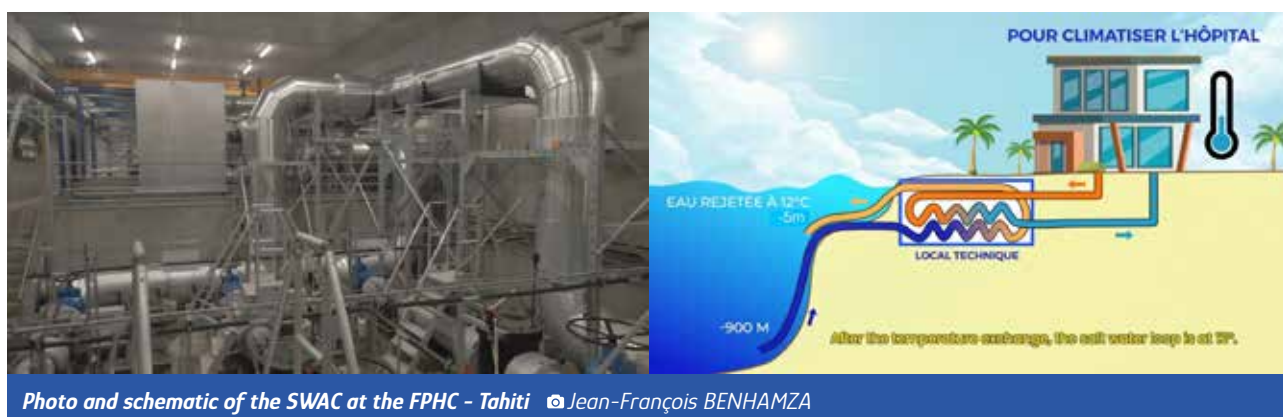


Photo and schematic of the SWAC at the FPHC - Tahiti © Jean-François BENHAMZA

### 1.C.d) Challenges and prospects for marine resources

The use of marine resources must be balanced with the preservation of ecosystems. French Polynesia has the opportunity to become a world leader in the sustainable development and preservation of marine resources, drawing on innovative technologies and international partnerships, while protecting its waters. However, this requires rigorous governance, investment in research and development, and increased awareness of environmental issues.

<sup>55</sup> "Les ressources marines de la Polynésie française : applications en matière de biotechnologie" Jean GUEZENNEC, Cécile DEBITUS - IRD editions 2005.



## 1.D. OTHER ECONOMIC ISSUES: GEOPOLITICS AND GEOECONOMICS

### 1.D.a) *The Indo-Pacific strategy and the role of French Polynesia*

#### 1.D.a.1) *Defining the Indo-Pacific strategy*

The Indo-Pacific strategy is a geopolitical approach that aims to structure international relations in a region encompassing the Indian and Pacific Oceans. The concept was born out of the rise of China and India, and the shift in the world's economic center of gravity towards this area. The Indo-Pacific is now a key strategic area, where major economic, security and environmental issues are concentrated.<sup>56</sup>

France, like several other powers, has adopted a specific strategy for this region, emphasizing cooperation, maritime safety and the preservation of natural resources<sup>57</sup>.

#### 1.D.a.2) *French Polynesia's place in the Indo-Pacific strategy*

French Polynesia plays a key role in France's Indo-Pacific strategy and is a major strategic asset<sup>58</sup>. The territory enables France to maintain a military and diplomatic presence in the Pacific, while strengthening its partnerships with regional players such as Australia, Japan and the United States<sup>59</sup>.

French Polynesia is also a focal point for environmental cooperation, particularly in the management of marine resources and the fight against climate change<sup>60</sup>. Its geographical position gives it particular importance in discussions on ocean governance and the preservation of biodiversity<sup>61</sup>.

In short, the Indo-Pacific strategy is a geopolitical framework with a structuring effect, and French Polynesia occupies a strategic place in it because of its maritime expanse and its role in regional cooperation.

### 1.D.b) *Developing digital infrastructures: from satellite to fiber optic*

Long connected to the rest of the world only by satellite, French Polynesia reached a turning point in 2010 with the Honotua submarine cable, linking Tahiti to Hawaii. This was followed by the Manatua cable, installed in 2020, which connects Tahiti to Samoa, Niue, Cook and Bora-Bora, enhancing the security and quality of Internet access.

In 2018, the Natitua project extended connectivity to around 20 remote islands, reducing digital inequalities. The northern branch, inaugurated the same year, serves 22,000 residents of Tuamotu and Marquesas, while in 2023 the cable was extended southwards to include the Austral Islands, including Rurutu and Tubuai.

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<sup>56</sup> Vaimiti Goin, "L'espace indopacifique, un concept géopolitique à géométrie variable face aux rivalités de puissance", Géoconfluences, October 2021. - <https://geoconfluences.ens-lyon.fr/informations-scientifiques/dossiers-thematiques/oceans-et-mondialisation/articles-scientifiques/espace-indopacifique-geopolitique>.

<sup>57</sup> Marc Abensour, "Géopolitique de l'Indopacifique : comprendre la stratégie française", 16 January 2025. <https://legrandcontinent.eu/fr/2025/01/16/geopolitique-de-lindopacifique-comprendre-la-strategie-francaise>.

<sup>58</sup> Assemblée Nationale, Rapport d'information n° 1005 déposé en application de l'article 145 du règlement, par la commission des affaires étrangères sur la place de la France dans l'Indopacifique, Thursday 20 February 2025.

<sup>59</sup> France's strategy in the Indo-Pacific. - [https://www.diplomatie.gouv.fr/IMG/pdf/fr\\_a4\\_indopacifique\\_022022\\_dcp\\_v1-10-web\\_cle017d22.pdf](https://www.diplomatie.gouv.fr/IMG/pdf/fr_a4_indopacifique_022022_dcp_v1-10-web_cle017d22.pdf)

<sup>60</sup> Assemblée Nationale, Rapport d'information n° 1005 déposé en application de l'article 145 du règlement, par la commission des affaires étrangères sur la place de la France dans l'Indopacifique, Thursday 20 February 2025.

<sup>61</sup> France's strategy in the Indo-Pacific.

These initiatives make **French Polynesia a strategic digital hub in the South Pacific**. The territory's central location, between Australia and the Americas, makes it a key point for regional connectivity. This explains the involvement of major companies such as Google, currently developing undersea cable projects linking Australia, the United States and Chile, via French Polynesia and the Fiji Islands. These infrastructures not only strengthen local and international connectivity, but could also generate economic spin-offs and enhance the region's digital appeal.

However, **the installation of submarine cables raises environmental issues, particularly their potential impact on the seabed**. Laying these cables can disturb benthic habitats<sup>62</sup>, damage coral reefs and affect certain sensitive marine species. Careful planning and in-depth environmental studies are therefore needed to limit these impacts and ensure sustainable management of marine ecosystems, while continuing to develop digital infrastructures.

## C. THE CULTURAL CHALLENGES OF MARINE RESOURCES IN FRENCH POLYNESIA

### 1. THE RĀHUI

In French Polynesia, the sea is not only a resource, but also a pillar of community identity and resilience.

Marine resources are not only of economic importance, they are also at the heart of Polynesian **cultural heritage**. Ancestral knowledge and traditional marine resource management practices, such as **Rāhui**, bear witness to a deep and respectful relationship between the people of French Polynesia and their marine environment. These ancestral cultural practices are a precious heritage that continues to guide efforts to conserve and sustainably manage marine resources.

Polynesian culture has a deep connection with the ocean, which plays an essential role in local traditions, beliefs and practices. Preserving marine resources is much more than an environmental issue: it is also a cultural necessity, intended to protect a unique intangible heritage.

A sacred "Marae"<sup>63</sup>, the Pacific Ocean is a living matrix where life is interwoven in a symbiotic relationship that honors the Polynesian triangle.<sup>64</sup>

Since time immemorial, the Polynesian people have developed remarkable expertise in fishing and sailing, passing on ancestral knowledge from generation to generation to sustainably use resources from the lagoons and oceans. This maritime knowledge also holds a strong spiritual dimension; the sea is often perceived as a source of life and associated with divinities and founding myths, of which Tangaroa is a major figure.

Traditional practices, such as sailing without modern instruments, embody this knowledge transmission and are symbols of cultural pride. Double-hulled canoes, once used by the elders, remain emblems of this heritage today, illustrating the immutable relationship between Polynesian culture and its marine environment.

According to Tamatoa Bambridge, anthropologist at CRILOBE and research director at the CNRS, Rāhui is a community decision. He points out that Rāhui was not reserved exclusively for chiefs, but was also decided upon by families and local communities.

<sup>62</sup> Relating to the bottom of the sea or fresh water, however deep (Larousse).

<sup>63</sup> The marae is a social and sacred space in Polynesia, used for religious, political and cultural activities. In French Polynesia, it refers to a stone or coral platform where ancient Polynesian cults were held. According to the Larousse dictionary, it is a rectangular paved courtyard used for religious rites.

<sup>64</sup> Hawaii, New Zealand and Rapa Nui.





This shared, participatory governance model enabled more balanced management of natural resources, by directly involving the inhabitants in preserving marine and terrestrial areas.

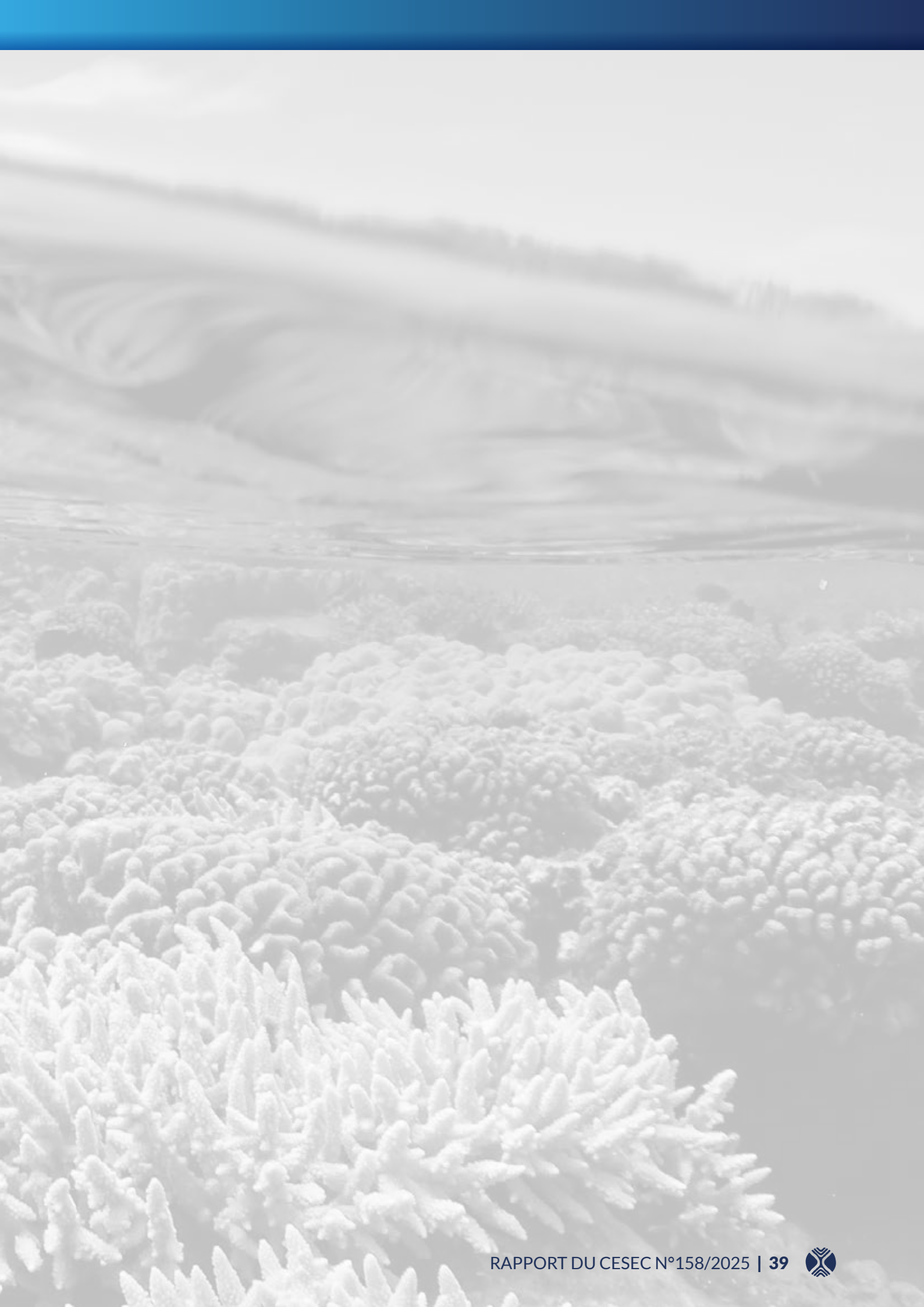
## 2. CHALLENGES AND THREATS TO CULTURE

However, several challenges threaten these traditions. With modernization, certain sustainable fishing practices and the oral histories that accompanied them risk disappearing, leading to an **erosion of ancestral knowledge**. In addition, the intensification of commercial fishing and the development of coastal infrastructures may encroach on the customary practices of local communities, creating **conflicts between traditional uses and modernity**.

Preserving the lagoons is also a major challenge, as certain species of fish and coral reefs, essential to biodiversity and cultural practices, are under increasing threat from overfishing and pollution. Faced with these challenges, it is essential to adopt appropriate conservation measures to preserve these traditions while ensuring sustainable management of marine resources (Troca, Burgo, Squilla, Lobster, Holothurian, Polyplacophore (Mama)).









# **INITIATIVES AND PROSPECTS FOR THE SUSTAINABLE DEVELOPMENT OF FRENCH POLYNESIA'S MARINE HERITAGE**

# 02





## A. INITIATIVES UNDERTAKEN

### 1. CESEC'S WORK

The institution's work bears witness to the commitment of Polynesian organized civil society to the sustainable development of marine heritage, through a series of reports and opinions that reflect the issues and challenges involved in preserving marine areas. However, this list is not exhaustive, and other CESEC contributions continue to enrich collective thinking on the sustainable management of marine and coastal ecosystems in French Polynesia.

#### 1.A. PRESERVATION OF POLYNESIAN BEACHES AND COASTLINES

In 2013<sup>65</sup>, CESEC issued several recommendations to enhance and preserve Polynesia's beaches and coastline. Firstly, it proposed **an active land policy to protect the coastline and improve access to coastal areas**. The introduction of a "**coastal law**" is also recommended to ensure better coordination of actions and balanced management of marine and coastal areas. This law would support efforts to organize and organize the use of beaches, by creating different coastal zones according to their level of urbanization, while improving visitor facilities and safety.

CESEC also stresses the importance of **promoting the cultural and heritage identity of the coast**, by enhancing traditional place names and installing informative signage.

In terms of governance, it recommends **strengthening the cross-disciplinary nature of the involved stakeholders and involving local authorities in beach management**.

A stricter regulatory framework is also suggested, to combat pollution through appropriate repressive measures. In terms of preserving the coastline, it is essential to ensure compliance with current legislation, combat erosion, preserve natural areas and safeguard the health of coral reefs. **The adoption of the "polluter pays" principle** is also encouraged to ensure responsible management of natural resources.

Lastly, CESEC highlights the need to **educate and raise awareness among local people** through communication campaigns and educational initiatives, while developing sustainable tourism that respects the coastal environment.

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<sup>65</sup> Report no. 151 of 31 October 2013 "The development of public beaches in French Polynesia: between essential tourist use and development ?"



## 1.B. SUSTAINABLE GOVERNANCE OF POLYNESIA'S MARINE HERITAGE

In 2015, as part of the sustainable management of French Polynesia's marine heritage, several key recommendations were put forward by CESEC to address the specific issues related to this heritage<sup>66</sup>.

Firstly, regarding the occupation of the Public Maritime Domain (DPM), CESEC is once again proposing the introduction of a "coastal" law inspired by that applied in mainland France, aimed at protecting the shores and the public maritime domain.

In terms of **port infrastructure**, it is crucial to finalize the **master plan for the Papeete Port Authority** (*Port Autonome*) to guarantee safety and improve surveillance. In addition, clear decisions must be taken regarding certain projects, such as *Faratea*, by carrying out a preliminary assessment to redefine their direction or, if necessary, consider abandoning them.

In terms of **tourism**, the institution highlights the importance of developing new niches, particularly in the field of **ecotourism**, taking advantage of the exceptional richness of Polynesia's marine heritage. This dynamic requires greater support for the involved stakeholders, through measures such as tax exemption and employment subsidies.

For semi-industrial **deep-sea longline fishing** (12 - 24 meter boats), the emphasis is on modernizing the local fleet with high-performance equipment and vessels better suited to fresh fishing. An overall development strategy on a regional scale and an ambitious fisheries policy need to be drawn up, supported by an attractive tax exemption scheme and a training program for captains.

Regarding **inshore and lagoon fishing**, it is recommended that the use of *poti marara* (Tahitian fishing speedboats) and *bonitiers* (Bonito fishing boats) be regulated, and that catch quotas be introduced according to species. This approach aims to prevent overfishing while ensuring optimal marketing channels

The **development of aquaculture** is also advocated, with positioning to address Asian markets, while limiting environmental impact (e.g. seaweed and holothuria sea cucumber farming)

For the **pearl farming** industry, CESEC recommends implementing a **10-year strategy to develop this sector in a sustainable way**. This includes improving pearl quality, limiting pearl production and regulating exports to ensure sustainable growth in a pollution-free environment.

As for **mining resources**, the creation of a **center of dedicated to the evaluation and responsible exploitation of marine resources** is suggested. Projects such as the Makatea phosphate project should undergo rigorous impact assessments and involve local communities.

**On the energy front**, it is recommended that marine technologies such as SWAC<sup>67</sup> and OTE<sup>68</sup> be exploited, while seeking state support via the CSPE<sup>69</sup>.

French Polynesia's **EEZ** requires increased **human and technological resources to monitor** illegal activities, including greater use of satellite imagery and reporting requirements for all vessels.

Faced with the challenges of **global warming**, close collaboration with the State and the European Union is essential. This is necessary to carry out impact studies that will help anticipate the effects on fishing, mining and energy resources.

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<sup>66</sup> Report no. 152 of 21 January 2015 "The future of French Polynesia and the governance of its marine heritage".

<sup>67</sup> Sea Water Air Conditioning.

<sup>68</sup> Ocean Thermal Energy.

<sup>69</sup> Contribution to the Public Electricity Service.

Finally, the institution insists on **improving marine governance**, by integrating local stakeholders, implementing ecosystem-based management, establishing marine educational areas and streamlining existing structures. The Conseil Polynésien de la Mer et du Littoral, a Polynesian sea and coastal council should play a central role in overseeing these efforts.

### 1.C. ON THE MORATORIUM ON DEEP-SEA MINING

In its opinion no. 105/2022 of 2 September 2022, CESEC expressed its views on the draft resolution aimed at introducing a moratorium on deep-sea mining. This moratorium, designed as a temporary halt, is intended to respond to the threats to ocean health, biodiversity and ecosystems.

CESEC stressed that the development of an ambitious deep seabed policy requires **clarification of the division of powers between the State and the government of French Polynesia**. It also recommended that **the notions of "strategic raw materials", "rare earths" or "strategic metals" be better defined through technical and legal consultation between the authorities**.

From an economic point of view, the Commission noted that current studies do not yet allow for a precise assessment of the economic and industrial potential of these resources. However, it believes that **further exploration is essential to improve knowledge and better understand the economic, social and scientific issues involved, as part of a forward-looking approach**. This process is in line with the objectives of the "France 2030" plan.

Regarding environmental issues, CESEC warned of the risks to the ecological and geophysical balance of the seabed, emphasizing **that even scientific exploration can have negative impacts**. It recommends **better legislative and regulatory oversight of these activities, stronger tools for preserving marine environments and more precise application of the "precautionary principle"**.

As for the draft moratorium, CESEC noted that it does not provide for any precise duration, which could be perceived as a lack of strategy in the face of the many issues at stake. CESEC therefore calls for **a proactive and collaborative strategy to be developed, focusing on research, exploration and the development of local skills (scientists, geologists, biologists, etc.), while reflecting a Polynesian and Oceanian vision, in line with the cultural importance of the ocean**.

Lastly, CESEC **noted that the absence of a legal framework dedicated to deep-sea exploration and exploitation in French Polynesia limits the scope of the moratorium**. While insisting on the need to preserve the Polynesian EEZ from external pressures, it recalls the unfortunate precedents of Makatea and the Pacific Experimental Center (CEP)<sup>70</sup>, reinforcing the importance of appropriate regulations and a truly sustainable approach.

The moratorium on deep-sea mining in French Polynesia was adopted by the Assembly of French Polynesia in Resolution No. 2022-100 APF of December 8, 2022.

### 1.D. FRENCH POLYNESIA'S 2030 CLIMATE PLAN

French Polynesia is facing the effects of climate change, with populations concentrated in coastal areas, developed areas located at low altitude, fragile ecosystems subject to multiple disturbances, and an intensification of extreme climatic phenomena. Although many studies have been carried out on risks, they have focused mainly on ecosystems (terrestrial, lagoon and marine), leaving aside the socio-economic and cultural dimensions.

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<sup>70</sup> In Makatea, phosphate mining, which lasted from 1908 to 1966, came to an abrupt halt in order to promote the establishment of the CEP. Makatea was abandoned without any rehabilitation of the site, and the Fantagaufa and Mururoa atolls cannot be fully rehabilitated.



Despite progress in addressing these issues through planning policies (such as SAGE<sup>71</sup>, the PGA<sup>72</sup> or the PPR<sup>73</sup>) and measures to preserve ecosystems, efforts to mitigate the global effects of greenhouse gas (GHG) pollution, plastics and waste are still insufficient and require stronger collective action.

In these circumstances, CESEC calls for the harmful effects of climate change in French Polynesia to be highlighted, emphasizing the territory's great vulnerability<sup>74</sup>. Similar to the 2016 Ocean Declaration, CESEC recommends recognizing **the importance of the ocean as a "carbon sink" to help mitigate the impacts of climate change, on both national and international levels.**

CESEC also calls attention to the threat posed by **rising sea levels**, which increases the risk of submerging atolls and low-lying islands, and **raises the question of the loss of EEZs and continental shelves** (e.g. Tuvalu and Kiribati).

Therefore, it recommends **that national and international authorities continue to reflect on and implement measures.** This includes **the possibility of amending the Montego Bay Convention** to guarantee the preservation of the marine heritage of States affected by rising sea levels (see report published in 2015).

## 2. ACTIONS IMPLEMENTED IN FRENCH POLYNESIA

As part of the sustainable management of marine resources, various actions are being implemented in French Polynesia to preserve and enhance the marine heritage. The measures presented below are among the main initiatives undertaken to promote sustainable development, although this list is not exhaustive and other measures may also contribute to the protection of marine ecosystems.

### 2.A. MONITORING SUSTAINABLE DEVELOPMENT GOAL 14 IN FRENCH POLYNESIA

**Sustainable Development Goal (SDG) 14** aims to conserve and sustainably use the oceans, seas and marine resources. In French Polynesia, this objective is crucial, given the vastness of its EEZ.

French Polynesia has set up several mechanisms to monitor and achieve SDG 14 :

- The **Tainui Atea Marine Managed Area**, which covers the entire Polynesian EEZ and aims to protect marine ecosystems while ensuring sustainable management of resources.
- **Regulating fishing**, with quotas and bans to prevent overfishing.
- **Scientific monitoring of coral reefs**, essential for measuring the impact of climate change and human activities (CRIOBE, IFREMER, UPF...).
- **Awareness and education programs**, aimed at involving local populations in the preservation of the oceans (Marine Educational Areas).

Monitoring of SDG 14 in French Polynesia is ensured by regular reports, enabling progress to be assessed and public policies to be adjusted. French Polynesia is also working with international and regional organizations to strengthen the protection of its waters and marine biodiversity<sup>75</sup>.

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<sup>71</sup> General Development Plan for French Polynesia.

<sup>72</sup> General Development Plan

<sup>73</sup> Natural Risk Prevention Plan.

<sup>74</sup> Opinion no. 30 of 5 September 2024 on the draft resolution approving French Polynesia's 2030 Climate Plan.

<sup>75</sup> Report on the monitoring of the SDGs in French Polynesia 2021 prepared, drafted and formatted by the "SDG indicators" working group, set up by mandate of the President of French Polynesia (circular n°4337/PR of 20 July 2020), and made up of the Institute of Statistics of French Polynesia (ISPF), the Directorate of Modernization and Reform of the Administration (DMRA), and the Delegation for International, European and Pacific Affairs (DAIEP).



## 2.B. TAINUI ATEA MARINE MANAGED AREA (MMA)

The Tainui Atea Managed Marine Area is a maritime space classified since 2018 under category VI1 of the French Polynesian Environment Code. It covers the entire EEZ of French Polynesia, an area of almost 5 million km<sup>2</sup>, representing 95% of Polynesian maritime space and 45% of French maritime space<sup>76</sup>.

Tainui Atea aims to preserve marine ecosystems while ensuring the sustainable management of natural resources. Its 2023-2037 management plan is based on four main objectives :

- Preserving emblematic marine species by reducing the pressures associated with maritime activities.
- Strengthening the protection of deep-sea ecosystems, based on scientific research and traditional knowledge.
- Maintain the conservation status of species targeted by deep-sea fishing.
- Spatial management of the managed marine area in partnership with other stakeholders.

Tainui Atea is managed by a management board and a civil society consultation body. Its management plan is implemented through five-year action plans, the first of which (2023-2027) includes 19 action points.

As part of an evolutionary approach, the plan will be updated in 2027 for the period 2028-2032, incorporating the successes and challenges encountered.

## 2.C. REGULATING FISHING

### 2.C.a) Marine resources management

French Polynesia has adopted a **strict policy of preserving its marine resources** since deliberation no. 97-32 of February 20, 1997 (article 1<sup>er</sup>), **by prohibiting access to its territorial waters by any foreign-flagged vessel for the purposes of destructive industrial fishing (seine, trawl)**.

The aim of this measure is twofold: to limit the pressure exerted by foreign industrial fishing on fish stocks, and to preserve local fishing practices that are more respectful of marine ecosystems. By reserving these waters for locally registered vessels, French Polynesia aims not only to protect marine species, but also to strengthen its economic and environmental sovereignty.

This ban, which has been in effect for over two decades, is now seen as a fundamental aspect of Polynesian maritime policy. It highlights the territory's commitment to sustainably manage its natural resources, while promoting the value of marine ecosystems for future generations.

### 2.C.b) The Marine Stewardship Council (MSC) label

The **Marine Stewardship Council (MSC)** is an independent international non-profit organization. It runs an ambitious certification and labeling program for seafood products.

Its aim is to encourage good fishing practices and preserve the oceans for future generations.

For over 20 years, the MSC has been working with independent experts to develop criteria for sustainable fishing and traceability of seafood products. This logo on products guarantees consumers that they come from sustainable, well-managed fisheries.

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<sup>76</sup> Introduction of the 2023-2037 management plan for the Tainui Atea marine managed area.



In June 2018, French Polynesia was awarded MSC certification after two years of assessment by a group of independent experts. This recognition attests to the sustainability of Polynesian longline fishing, based on three essential criteria.

The first criterion concerns the health of fish stocks, which must be maintained at a level that guarantees their sustainability. The second concerns the management of environmental impacts, with practices aimed at preserving the diversity and productivity of marine ecosystems. Finally, the governance of the industry and the monitoring of the fleet are deemed to be effective, ensuring responsible management of fisheries resources.

To obtain this certification, the industry focused on two main species: albacore tuna, known as "*A'ahi taria*", and yellowfin tuna, known as "*A'ahi rea rea*". Thanks to these efforts, French Polynesia is affirming its commitment to the sustainable exploitation of its tuna resources.



### 2.C.c) Regulated Fishing Zones (RFZ)

**Regulated Fishing Zones (RFZ)** are delimited portions of the maritime area where specific fishing rules are introduced. They are an effective tool for dealing with the risks of overexploitation of the lagoons by reducing fishing pressure. Many communes in French Polynesia already have such zones.

RFZs in French Polynesia are maritime areas where specific fishing rules have been introduced to preserve fishery resources, regenerate overexploited stocks and settle conflicts of use. These zones are set up at the request of local authorities, in consultation with fishermen, elected representatives and representatives of civil society.

By September 2023, there were 34 RFZs spread throughout the Fenua, the Polynesian territory. Each one is managed by a management committee, which is responsible for proposing regulatory measures, alerting the authorities to any malfunctions, participating in surveillance and raising public awareness. Fishing rules vary according to local conditions, considering the species targeted, the state of stocks and fishing practices<sup>77</sup>.

For example, certain endangered species such as the "mama", a polyplacophore from the Marquesas Islands, or "remu", a seaweed from the Austral Islands, should be regulated, as should the exploitation of lobsters.

The first Regional Workshop on RFZs, held in May 2022, brought together stakeholders from Wallis and Futuna, New Caledonia, Fiji and international networks to discuss management methods and consider the creation of a regional network of RFZs. This system is part of a sustainable and co-managed fishing approach, aimed at protecting Polynesian lagoons while ensuring a viable economic activity.

<sup>77</sup> French Polynesia Marine Resources Directorate.

## 2.D. SCIENTIFIC MONITORING OF CORAL REEFS

In French Polynesia, **several scientific programs monitor coral reefs** to better understand their evolution and guide conservation efforts. These initiatives are led by various specialized institutions.

One such example is the Coral Reef Monitoring Network, set up by the Pacific Coral Reef Institute (IRCP), which plays a key role in observing these ecosystems. Based at the *Centre de Recherches Insulaires et Observatoire de l'Environnement* (CRIOBE) – a French research center of excellence focusing on coral reefs –, this network monitors reefs on 13 islands in French Polynesia. Using probes to measure water temperature and conducting in-depth biological monitoring, it provides a better understanding of underwater dynamics<sup>78</sup>.

On a national scale, the French Coral Reef Initiative program (IFRECOR), focuses on the ecological evolution of coral reefs in French Polynesia. The program mobilizes researchers and institutions, particularly IFREMER, the French national institute for ocean science and technology, to analyze the impact of environmental changes on these fragile ecosystems<sup>79</sup>.

The recent example of the Tatakoto atoll illustrates these challenges and scientific advances. In this Tuamotu archipelago atoll, a concentration of 'super corals', capable of withstanding episodes of intense heat as well as extreme temperature fluctuations, was revealed as part of the expeditions supported by UNESCO, Labex Corail, the University of French Polynesia (UPF). These corals are studied in collaboration with the CRIOBE and SECOPOL laboratories and the 1 OCEAN initiative<sup>80</sup>.

## 2.E. AWARENESS AND EDUCATION PROGRAMS

### 2.E.a) The Rāhui

Rāhui is a concept deeply rooted in Polynesian culture, representing both a temporary ban and a measure to preserve natural resources. Historically, it was used by the ancient Polynesians to protect certain marine and land areas, thereby guaranteeing their regeneration and the sustainability of resources. This temporary ban could be decided by a chief or council, often marked by visible signs indicating that access was restricted.

With the evolution of societies and the need to reconcile tradition and modernity, Rāhui has gradually found its place in the legal and environmental framework of French Polynesia. Today, it is recognized as a sustainable management tool, integrated into certain regulations governing fishing and the conservation of natural areas. It is also a vehicle for cultural transmission, strengthening the bond between generations and their respectful relationship with the environment.

**Incorporating Rāhui into the Polynesian environmental code** reflects the desire to enhance ancestral knowledge while adopting a scientific approach to ecological preservation. Based on the principles of Rāhui, local authorities and communities seek to preserve biodiversity and promote the use of resources in accordance with traditional practices.

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<sup>78</sup> Sources: IRCP, CRIOBE.

<sup>79</sup> Sources: IFRECOR, IFREMER.

<sup>80</sup> UNESCO – <https://www.unesco.org/fr/articles/super-coraux-thermoresistants-un-espoir-pour-lavenir-des-recifs-coralliens>.



According to Article LP 2122-1 of the Polynesian Environment Code, which resulted from Local Law No. 2017-25 of 5 October 2017, *"the Rāhui is a land and/or marine area on which unwritten rules, dictated by a resource management imperative are applied in a traditional manner. These rules, restrict or forbid the exploitation of one or more natural or cultivated resources within a set area and timeframe. This allows the specified resources to replenish and become sufficient when the Rāhui is lifted. These unwritten rules, when applied in a traditional manner, must not contradict the laws and regulations in force in French Polynesia, in particular the provisions of this Code"*.

An examination of the Tainui Atea AMG management plan reveals a close link with the concept of Rāhui. Order No. 4247/MCE of April 6, 2020, which approves this management plan, follows a similar logic to that of the Environmental Code. It aims to encourage the recognition and integration of the principles derived from traditional management tools into the current legal framework and the range of instruments available to modern managers. This is particularly achieved by revitalizing the Rāhui. The goal is to make the AMG an exemplary model and a true alternative to the privatization of maritime areas and their resources<sup>81</sup>.

One notable example is the Rāhui of Teahupoo, where a maritime zone of over 750 hectares has been designated to sustain the biodiversity and reproduction of marine species vital to the local population. This program is part of an comprehensive approach to sustainable management, that also incorporates the preservation of surrounding land areas.

### *2.E.b) Educational Marine Areas (EMAs): Rāhui on the move*

**Educational Marine Areas (EMAs)** are an initiative born in French Polynesia, to involve pupils in the participatory management of a marine area near their school. Born in 2012 in the Marquesas Islands, the concept has been steadily expanding under the guidance of the Ministry of Education to encompass all Polynesian archipelagos, while maintaining a deep respect for ancestral culture.

In 2014, the PUKATAI pilot program was launched in the Marquesas Islands to test the EMA label methodology. Since then, the program has been incorporated into the Local law of July 13, 2017, affirming its importance in Polynesian educational and environmental policy.

As of 2022, 32 schools across the 5 Polynesian archipelagos held the EMA label, involving approximately 2,000 pupils.

EMAs enable pupils to develop ecological awareness, civic responsibility and an in-depth knowledge of their natural and cultural heritage. They are based on compliance with an EMA methodology and charter, which aim to implement the three pillars of these areas :

- Teaching young people about eco-citizenship and sustainable development,
- Reconnecting students with nature and their local area,
- Encourage dialogue between students, those involved in the sea (users, economic stakeholders) and managers of natural areas.

This educational model is now seen as a promising avenue for education for sustainable development, in line with UNESCO's recommendations.

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<sup>81</sup> Nathalie Ros. "L'aire marine gérée de Polynésie française: une alternative à la privatisation des mers et des océans. Neptunus", 2022, 28 (1), pp.1-23. hal-03788018.



Launched in September 2016 with 8 pilot schools, the network of marine educational areas now has 261 EMA projects in France, Corsica and several overseas departments. More than half have already been awarded the "marine educational area" label<sup>82</sup>.

The project is supported by a national steering committee made up of the Ministries of Ecological Transition and Territorial Cohesion, National Education, Overseas France and the French Biodiversity Office (OFB).

## 2.F. TIGHTER CONTROLS ON FOREIGN VESSELS IN FRENCH POLYNESIA

The French High Commissioner in French Polynesia recently tightened the **regulations governing the entry of foreign vessels into Polynesian ports and transshipment operations in waters under French sovereignty and jurisdiction**. This measure, formalized by Order No. 48 HC/SEAM PF/DIR of 13 February 2025, aims to improve surveillance of maritime activities, combat illegal fishing and ensure more rigorous management of fishery resources.

From now on, any foreign fishing vessel wishing to enter a Polynesian port or tranship at sea must obtain official authorization before operating. This requirement allows the authorities to better control maritime flows and ensure traceability of cargoes. Transshipments are now strictly controlled, with each transfer of cargo between ships having to be declared and validated in advance. These measures are designed to limit the risks of undeclared fishing and illegal trade.

At the same time, controls have been stepped up, with more frequent inspections to check the compliance of declarations and to ensure that the regulations in force are respected, to limit the development of destructive industrial fishing as much as possible.

## 2.G. FRENCH POLYNESIA'S COMMITMENT TO SUSTAINABLE SEABED MANAGEMENT

In December 2024, French Polynesia, IFREMER and the French government signed an **agreement aimed at strengthening scientific cooperation for the exploration and preservation of the deep seabed in French Polynesia**. This collaboration is part of an approach to sustainable and responsible management of marine resources, with the aim of preserving marine ecosystems while developing sustainable economic alternatives.

The priorities for scientific cooperation under this agreement are as follows :

- Mapping and studying seamounts, particularly those in the Marquesas, Tahiti and the Austral Islands, to gain a better understanding of biodiversity and ecological interactions.
- The creation of an international chair dedicated to the deep seabed to attract researchers and funding, making French Polynesia a center of scientific excellence in the Pacific.
- Strengthening regional cooperation and sharing knowledge between French Polynesia and neighboring countries, in particular the Cook Islands, Kiribati and Pitcairn, to assess the environmental impact of any mining operations.

French Polynesia has also adopted a moratorium on deep-sea mining, which was passed by a large majority of the Assembly of French Polynesia in December 2022. This moratorium aims to ensure a cautious and scientific approach to any potential exploitation of undersea resources. It is based on several fundamental principles :

- carrying out rigorous impact assessments to understand the environmental, social and economic risks associated with mining.

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<sup>82</sup> French Office for Biodiversity (OFB).

- the application of the precautionary principle, the ecosystem-based approach and the polluter pays principle.
- the development of policies promoting a circular economy and the responsible use of metal resources.
- the introduction of public consultation mechanisms to ensure transparent decision-making and the involvement of local communities.

## 2.H. THE CREATION OF RESOLAG

**The lagoon observation network (RESOLAG)** is an environmental monitoring program set up in French Polynesia in 2018. Its main objective is to collect data on seawater parameters within the lagoon, particularly those affected by pearl farming activity, in order to improve pearl oyster management.

At the beginning of 2024, the network had 9 monitoring sites spread over 7 islands and 3 archipelagos. The accumulated experience has enabled the data collection strategies to be adapted to take account of the challenges posed by the geographical extent of the territory. The parameters measured include water temperature, dissolved oxygen, turbidity, fluorescence and salinity, providing an in-depth understanding of the interactions between pearl oysters and their environment.

RESOLAG is part of the PROTEGE project, financed by the European Union, in partnership with the Pacific Community and the French Polynesia Marine Resources Directorate, contributing to the sustainable management of lagoon ecosystems and adaptation to climate change.

Since 2021, collection campaigns have removed more than 1,000 cubic meters of pearl farming waste from the Leeward Islands and Tuamotu-Gambier, with technical landfill in Tahiti, although this process remains very costly (1 million F CFP per tonne). In 2023, the Plastic Odyssey association experimented with shredding plastic waste to transform it into building materials, while other projects are exploring the reuse of mother-of-pearl waste in sectors such as agriculture, animal husbandry, construction and parapharmacy.

## 2.I. ADOPTION OF THE 2030 CLIMATE PLAN

**French Polynesia's 2030 Climate Plan**, adopted in December 2024, aims to reduce greenhouse gas emissions by 50% by 2030 and to strengthen the territory's adaptation to climate change. It is based on 5 pillars and 24 guidelines, including the sustainable management of marine resources.

French Polynesia, with its EEZ of almost 5 million km<sup>2</sup>, is placing the preservation of marine ecosystems at the heart of its climate strategy. The 2030 Climate Plan provides for :

- Implementing the 2023-2037 management plan for the Tainui Atea managed marine area and developing community management of lagoon marine resources, to limit pressure on fish stocks and preserve biodiversity.
- Setting up monitoring systems to track the evolution of coral reefs in the context of global warming and ocean acidification.
- Adaptation of fishing practices with quotas and biological rest periods to guarantee the sustainability of resources.
- The development of sustainable aquaculture, particularly for pearl oyster farming and local species, to reduce dependence on imports and limit environmental impact.
- Research into seamounts and deep-sea ecosystems, in partnership with IFREMER, to better understand the effects of climate change on marine habitats.

This plan is part of a land-sea resilience approach aimed at protecting lagoons and coral reefs while ensuring sustainable management of maritime activities.

## 2.J. LAUNCH OF THE MAHEWA PROJECT

**The MaHeWa (Marine HeatWaves) project**, led by the IRD with the support of IFREMER and several scientific institutions, aims to study the impact of marine heatwaves on Pacific island ecosystems and populations. Working in partnership with experts in oceanography, biology, anthropology and economics, it seeks to strengthen the resilience of territories to these episodes of extreme warming.

These climatic phenomena are causing major environmental upheavals, such as coral bleaching, the death of marine species and the proliferation of toxic algae. The MaHeWa project is part of a transdisciplinary approach that brings together researchers, decision-makers and local communities to co-develop adaptation solutions and improve the management of environmental crises.

The main thrusts of the MaHeWa project are :

- Analysis of the characteristics of past and future marine heatwaves.
- Assessing the sensitivity of coral reefs and mariculture species (Austral seaweed).
- The study of the socio-economic resilience of regions in the face of these upheavals.
- The development of early warning systems and vulnerability maps for decision-makers.
- Designing adaptation solutions to preserve ecosystems and food security.

This program is supported by the French National Research Agency (ANR) and is part of the Ocean and Climate Priority Research Program and the France 2030 plan. Its aim is to provide managers with practical tools and to inform public policy on the environment and health.

## 2.K. IMPLEMENTATION OF THE 2022-2027 STRATEGIC TOURISM DEVELOPMENT PLAN

**The tourism development strategy, called "*Fa'ari'ira'a manihini*"** (a welcome that looks like us and brings us together), was devised during the health crisis and is based on three main themes: mitigating the effects of the crisis, relaunching the tourism industry and promoting inclusive and sustainable tourism. Approved in 2022, this strategy covers the 2022-2027 period and is based on governance structured around a steering committee, a tourism observatory and sectoral commissions.

Local law no. 2023-30, adopted in August 2023, aims to strengthen the structure of the sector by professionalizing the islands' tourism committees, 14 of which were approved that year.

Support for tourism investment includes hotel renovation and construction projects. In 2023, three projects were completed in the Windward Islands and, for 2024, four hotels are under construction in Tahiti, Moorea, Raiatea and Bora Bora, adding 240 rooms to the existing offer. Construction of the international cruise terminal, which began in March 2022, was inaugurated in February 2025 and can now accommodate up to 2,400 passengers.

## 2.L. ADOPTION OF THE 2022-2032 DEVELOPMENT MASTER PLAN FOR THE AUTONOMOUS PORT OF PAPEETE

The **2022-2032 development master plan for the Autonomous Port of Papeete**, approved by the Council of Ministers in March 2023, is based on two main guidelines: controlled expansion of the port area and optimizing existing infrastructure. This plan represents a total investment of around 26 billion F CFP, partly financed by loans taken out with the Territorial Bank *Banque des Territoires* (2.6 billion F CFP over 50 years) in December 2021 and the AFD (3.15 billion F CFP) in November 2022.

Taking into account forecasts for maritime trade, this plan includes several key projects: renovating the long-distance quay, deepening the Papeete channel, extending the international trade terminal, modernizing the coastal quays for inter-island freight, and the construction of the cruise terminal.

### 2.L.a) Flow management

As far as flow management is concerned, the "*Escales*" digital platform deployed by the Polynesian Department of Maritime Affairs is already used by cruise ships, allowing them to book their calls two years in advance. The use of this dematerialized service by users in the yachting sector seems to present more difficulties.

### 2.L.b) Inter-island shipping

The inter-island fleet is ageing, with almost 40% of vessels over 40 years old. This leads to frequent breakdowns, disrupting supplies to the islands. To alleviate these problems, the government is investing in fleet renewal through tax credits and tax exemption schemes.

## 2.M. THE INNOVATION 2030 STRATEGY FOR SUSTAINABLE AND INCLUSIVE DEVELOPMENT

French Polynesia's Innovation Strategy 2030 is an ambitious roadmap designed to make the territory a model of sustainable and inclusive island development. It is based on three pillars :

- a vision that positions Polynesia as a territory that can demonstrate island solutions to the ecological, food, energy and climate challenges ;
- an ambition to strengthen economic autonomy by focusing on innovation and excellence ;
- and a method, based on broad consultation between institutional, economic and academic stakeholders<sup>83</sup>.

This strategy comprises a plan of 40 operational actions based on several themes, including the development of a sustainable blue economy, land-sea resilience, the bioeconomy, biotechnological development and eco-cultural tourism. It is based on collaborative governance, involving the ministries responsible for research and the economy, as well as committees dedicated to monitoring and implementing projects.

## 2.N. PLASTIC WASTE REDUCTION POLICY

French Polynesia has introduced a **policy to reduce plastic waste**, with the aim of phasing out single-use products between 2025 and 2028. This transition follows on from the ban on plastic bags in 2022, and includes measures such as a ban on disposable cups, plates and cutlery from July 2025, followed by the elimination of plastic packaging for fruit and vegetables in 2027. A study is also under way to limit the use of plastic bottles of less than 1.5 liters, with a possible ban between 2028 and 2029.

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83 French Polynesia's Innovation Strategy 2030 for its sustainable and inclusive development : <https://www.service-public.pf/strategie-innovation/>



In terms of regulations, Polynesia is adapting its environmental code to provide a framework for these restrictions and to support economic players in the transition. Financial aid is planned to support businesses in adopting reusable materials, and obligations will be imposed on catering establishments to promote the use of reusable crockery.

## B. PERSPECTIVES AND STRATEGIC RECOMMENDATIONS FOR SUSTAINABLE DEVELOPMENT

In a context where the preservation of marine resources and economic development must coexist, **it is essential to establish a balanced approach between the protection of ecosystems and the rational exploitation of marine heritage.** This approach is fully in line with **Sustainable Development Goal 1**, which aims to **eradicate poverty in all its forms by ensuring the sustainable management of the resources essential to people's livelihoods.**

CESEC recommends that appropriate policies and regulations be put in place to ensure the responsible management of marine areas while guaranteeing the sustainability of fishing and economic activities. These recommendations are based on the following priorities:

### 1. INTEGRATE MARITIME EDUCATION AND THE COMMITMENT OF YOUNG PEOPLE TO PRESERVING THE OCEANS BY STRENGTHENING THE MARINE EDUCATION AREAS (MEAS) AND CREATING A MARITIME HIGH SCHOOL.

The institution stresses the urgent need to integrate **maritime education and the commitment of young people** to preserving the oceans by **strengthening Marine Education Areas (MEAs)** and **creating a Maritime high school.**

#### 1.A. STRENGTHENING AND PERPETUATING MARINE EDUCATION AREAS: AN ESSENTIAL LEVER FOR CONSERVATION AND EDUCATION

The **Marine Education Areas (MEAs)** embody an innovative participatory model in which young people are directly involved in the management of their marine environment. According to the CESEC, their development is a **priority** for raising awareness of conservation issues among young Polynesians and strengthening their relationship with the environment.

To maximize their impact, the institution recommends to :

- **Multiply their creation** throughout French Polynesia by encouraging new schools and communities to adopt this participative approach.
- **Define a structured framework and appropriate educational support**, including teacher training and the provision of educational resources tailored to sustainable ocean management.
- **Strengthen coordination between the involved stakeholders**, by setting up partnerships between schools, scientists, government institutions and environmental associations.
- **Ensure their long-term viability through dedicated funding**, enabling the establishment of an annual budget for their monitoring and development.

The CESEC considers that the MEAs, which aim to develop and share all the ocean's resources between generations, must be integrated into **local policies** to train **future decision-makers and managers** of marine areas, while promoting **shared governance** between young people, researchers, local communities and knowledge of ancestral practices.



## 1.B. CREATING A MARITIME HIGH SCHOOL: A CENTRE OF EXCELLENCE FOR MARITIME TRAINING AND CONSERVATION

CESEC also recommends the creation of a **Maritime high school** in French Polynesia, which would be a **reference centre** for ocean-related professions, combining **academic teaching, traditional Polynesian knowledge and technological innovations**.

Its objectives would be to :

- **Training a new generation of marine environment specialists**, through courses dedicated to marine ecology, sustainable aquaculture, oceanographic sciences and maritime professions.
- **Combining education and conservation**, working closely with EMAs to get secondary school students actively involved in protecting marine ecosystems.
- **Encouraging innovation and research**, by developing projects on renewable marine energy, SWAC or biomaterials from algae to limit plastic pollution.

## 1.C. SUPPORTING THESE INITIATIVES

In order to guarantee the success of the strengthening of the MEAs and the Maritime high school, the CESEC recommends that the local government :

- **Involve professionals from the sector** (scientists, fishermen, shipowners, environmental associations) in the development of courses, to ensure that training is adapted to the realities of the region.
- **Encourage regional cooperation**, by facilitating exchanges of students and researchers with other Pacific territories involved in marine conservation and the rational exploitation of resources.

For the institution, the development of MEAs and the creation of a Maritime high school would strengthen **French Polynesia's position as a leader in sustainable ocean management**, while preparing young people to become key players in marine conservation.

## 2. BANNING DRIFTING FADS IN INTERNATIONAL WATERS

CESEC points out that the release of drifting FADs **is already banned within the Polynesian EEZ**. To strengthen the protection of marine ecosystems and limit the negative impacts associated with these devices, **it recommends that this ban be extended to international waters**.

With this in mind, CESEC recommends :

- **A total ban on the use of drifting FADs in international waters**, to reduce uncontrolled drifting and its negative impact on biodiversity.
- **Tougher penalties** for ships that continue to use these devices in breach of the regulations.
- **The development of ecological alternatives**, such as fixed, biodegradable devices, to limit pollution and groundings on coral reefs.
- **Increased cooperation with international bodies**, in particular the WCPFC and the IATTC, to ensure proper coordination of regulations and effective application of this ban throughout the Pacific.

CESEC also stresses the importance of **raising awareness among those involved in the sector**, both locally and internationally, to promote responsible fishing practices and ensure the protection of marine resources. This ban is part of an overall strategy to enhance the sustainability of the fishing industry and eliminate risks associated with the use of drifting FADs.

Thus, facilitating the arrival of large fishing vessels or cruise ships, which are among the biggest emitters of greenhouse gases and various pollutants, would be tantamount to practicing a front policy that weakens the credibility of the Rāhui's environmental commitments.

### 3. IMPLEMENTING INTEGRATED LAGOON MANAGEMENT AND A "COASTAL" LAW IN FRENCH POLYNESIA

Polynesian lagoons are vital ecosystems, essential to biodiversity, the economy and local traditions. Integrated management is needed to ensure their preservation, while meeting the needs of local populations.

The need for regulations tailored to the preservation of coastal and marine areas has already been highlighted on several occasions by CESEC, in its aforementioned 2013 and 2015 reports. CESEC therefore reiterates its recommendation for the adoption of a "coastal" law, which is essential to guarantee the sustainable protection of these fragile environments while allowing economic and traditional activities to continue.

With this in mind, it is also imperative to put in place a maritime protection and development plan for marine space and volume.

#### 3.A. PRIORITY MEASURES FOR SUSTAINABLE MANAGEMENT

Effective management of the lagoons and coastline in French Polynesia is based on several complementary measures designed to protect the environment while maintaining a balance with human activities.

It is essential to **reduce pollution and protect water quality** by :

- setting up **rigorous environmental monitoring of** discharges and pollutants,
- developing filtration and decontamination solutions to **limit the presence of nano plastics** in marine waters,
- **banning the use of toxic sunscreens** and encouraging alternatives that respect coral reefs.

**The control of human activities and regulation in the 3 dimensions of the marine sphere: space, water column (pelagos) and seabed (benthos),** must be reinforced by establishing :

- **Clear, regulated maritime zoning**, defining areas dedicated to each activity (fishing, tourism, aquaculture, conservation) to reduce conflicts of use.
- **Mechanisms for mediation and consultation**, enabling the concerned stakeholders (professionals, local authorities, associations) to talk to each other, express their concerns and anticipate the impact of decisions on the environment and the local economy, to promote harmonious cohabitation between local residents and recreational boaters.
- **Increased surveillance of maritime activities**, by putting in place tighter monitoring and control systems to prevent abuse and ensure sustainable exploitation of resources.
- **Management of yachting flows**, by investing in appropriate infrastructure, in particular the creation of marinas and environmentally friendly mooring areas to prevent pollution and degradation of the seabed, using innovative financing mechanisms such as tax exemption funds and public-private partnerships to facilitate the development of this infrastructure without impacting public finances.

**Restoring marine habitats** involves :

- **support for coral replanting and reef rehabilitation programs**,
- experimentation with natural solutions to combat eutrophication<sup>84</sup> and improve the **quality of lagoons**.

Finally, it is essential to **promote sustainable tourism** by :

- demanding **eco-responsible practices** from tourism operators,
- developing **educational experiences** that incorporate the protection of marine ecosystems.

By implementing these measures, French Polynesia will be able to optimize the management of its maritime dimension, while guaranteeing harmonious coexistence between the various stakeholders and the preservation of marine ecosystems.

### 3.B. COASTAL LEGISLATION IS URGENTLY NEEDED

To guarantee effective protection in the long term, CESEC stresses **the urgent need to adopt a "coastal" law in French Polynesia, which would allow :**

- **to regulate coastal development within territorial waters (up to 12 nautical miles from the shore)** to prevent the degradation of shores and lagoons.
- **define environmental standards** to limit the impact of human activities.
- **support local initiatives** for the conservation and sustainable management of marine resources.

French Polynesia must **act quickly** to ensure the long-term survival of its lagoons and coastline. The adoption of a coastal law coupled with integrated management would ensure a **balanced cohabitation between the preservation of biodiversity and human activities**.

### 3.C. INTEGRATED THREE-DIMENSIONAL MANAGEMENT INSPIRED BY POLYNESIAN MODELS

The principles of **the Tainui Atea** and **Rāhui Marine Managed Area** show that it is possible to integrate :

- **Adaptive protection**, based on observation of natural cycles and community participation.
- **Intelligent regulation of activities**, enabling responsible fishing, sustainable tourism and the preservation of biodiversity.
- **Local management** that gives local people back the power to manage their own marine resources in an **age-old, scientific** way.

Drawing inspiration from the **Tainui Atea** and **Rāhui managed marine areas** would enable French Polynesia to become a benchmark **for the balanced management of lagoons**, combining **protection and sustainable exploitation** in line with local realities and ancestral knowledge.

## 4. ACCELERATING EXPLORATION AND SCIENTIFIC RESEARCH OF THE SEABED FOR INFORMED MANAGEMENT

CESEC reiterates the recommendations made in its opinion no. 105/2022 of 2 September 2022, **stressing the need to speed up scientific exploration of the deep seabed**.

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<sup>84</sup> Eutrophication is the excessive accumulation of nutrients, mainly nitrogen and phosphorus, in an aquatic environment. This leads to a proliferation of algae and aquatic plants, upsetting the ecological balance and potentially reducing the oxygen available, thereby threatening biodiversity.



Although research into these environments began more than 50 years ago<sup>85</sup>, the importance of structuring and intensifying this exploration has now been reinforced by the agreement signed in 2024 between French Polynesia, IFREMER and the French government. This agreement represents a major opportunity to increase our knowledge of deep-sea ecosystems, to better identify their biodiversity and to anticipate the strategic, environmental and economic issues linked to their preservation and possible exploitation.

Furthermore, considering Cook Islands's recent acceptance of China's support to explore their undersea resources, **CESEC is calling for rapid and concerted action**. The situation underscores the geopolitical and environmental implications of seabed exploitation, reinforcing the necessity of clear governance to safeguard French Polynesia's sovereignty and prevent external influence.

#### 4.A. DEPLOYING MODERN TOOLS AND PROVIDING A BETTER FRAMEWORK FOR RESEARCH

In light of these circumstances, CESEC is advocating for the expansion of interdisciplinary programs to facilitate collaboration between local and international research teams. These programs should integrate biological, geological and climatic approaches to the study of the deep seabed. CESEC supports the establishment of detailed seamount and abyssal plain mapping, as well as the installation of long-term observation systems. Specifically, it endorses the use of environmental sensors and autonomous vehicles to improve the monitoring and understanding of deep-sea ecosystems.

When installing future submarine cables, access to information about the seabed collected in French Polynesia's EEZ should be requested.

The acceleration of exploration must be accompanied by strict regulatory guarantees, **that specify the application of the precautionary principle and define a legislative framework that ensures the responsible management of future discoveries**.

#### 4.B. ANTICIPATING ECOLOGICAL AND ECONOMIC CHALLENGES

Although CESEC acknowledges that current studies do not allow a precise evaluation of the economic and industrial potential of deep-sea resources, it insists on the importance of ongoing exploration to refine this knowledge and structure appropriate governance. This approach is part of a long-term strategic vision.

The institution also calls for greater international cooperation to ensure concerted management of the deep seabed and avoid any uncontrolled exploitation that could endanger these fragile ecosystems.

#### 4.C. CLARIFYING THE GOVERNANCE AND MANAGEMENT OF STRATEGIC DEEP-SEA RESOURCES

Finally, CESEC reaffirms the need to develop maritime governance that involves local stakeholders and scientific experts to guarantee a balanced approach between research, preservation and exploitation. The 2024 agreement between French Polynesia, IFREMER and the French government is an initial step, but it must be supplemented by a clear and sustainable regulatory framework to safeguard the Polynesian EEZ against external pressures.

The institution stresses the need to **define a clear governance framework for the exploration and possible exploitation of the deep seabed, which should specify the division of powers between the state and French Polynesia**. This clarification is essential to guarantee sustainable and sovereign management of the resources present in the Polynesian EEZ.

<sup>85</sup> In its aforementioned report No 152 of 21 January 2015, CESEC points out that the first explorations carried out as part of European campaigns date back to the 1970s' following the discovery of hydrothermal resources off the coast of Mexico, and also mentions the EXTRAPLAC program launched by France in 2002.



The seabed may contain strategic raw materials, such as rare earths and strategic metals, which are attracting growing international interest. However, extracting them cannot be considered without in-depth consultation between local and national authorities to ensure that fundamental environmental and economic principles are respected.

In its opinion no. 105/2022 issued on September 2, 2022, CESEC already suggested a **more precise definition of these strategic resources**, through technical and legal consultation between the French State and French Polynesia. This approach would establish a regulatory framework that guarantees reasoned exploitation while avoiding external pressure and preserving the integrity of marine ecosystems.

The institution reiterates that the absence of a legal framework dedicated to these activities limits the scope of the current moratorium on deep-sea mining. Therefore, it recommends strengthening **legislative tools to provide a framework for exploration and ensure French Polynesia's sovereignty in the context of strategic international challenges**.

In light of the agreement signed in 2024 between French Polynesia, IFREMER and the French government, it is essential to **structure appropriate maritime governance that unites scientific, institutional and economic stakeholders**. This approach would reconcile scientific exploration, preservation of the marine environment and anticipation of future economic challenges.

## 5. STRENGTHENING REGIONAL AND INTERNATIONAL COOPERATION IN MARINE MANAGEMENT

CESEC emphasizes the importance of **increased cooperation** between countries and international bodies to effectively manage the oceans and to meet the environmental challenges posed by **climate change** and **anthropogenic pressures**.

### 5.A. ENCOURAGING THE EXCHANGE AND SHARING OF KNOWLEDGE

The institution recommends developing **collaborative platforms** between researchers, managers and decision-makers to :

- **Share scientific data** on marine ecosystems, fish stocks and the impacts of global warming.
- **Strengthen joint research programs** to improve understanding of ocean dynamics and adaptation solutions.
- **Set up training courses and exchanges of best practices**, involving local and regional stakeholders in sustainable management.

### 5.B. HARMONIZING REGULATIONS FOR EFFECTIVE MANAGEMENT

As the oceans are a shared heritage, protecting them requires a coherent, holistic approach. CESEC recommends :

- **Greater coordination** with fisheries management organizations, such as the **WCPFC** and the **IATTC**, to ensure fair and sustainable exploitation of marine resources.
- **Adoption of common standards** to preserve marine habitats, limit pollution and limit the impact of extractive industries.
- **Implementation of bilateral and multilateral agreements** to regulate maritime uses and resolve conflicts related to fishing zones and economic activities.

## 5.C. POOLING SURVEILLANCE RESOURCES AND TOOLS

To ensure effective protection of the oceans, CESEC recommends :

- **The development of joint satellite surveillance** to detect illegal activities and reinforce the application of regulations.
- **Sharing technologies and infrastructures**, such as observation stations and early warning systems for extreme weather events.
- **Greater collaboration in fighting illegal fishing**, through coordinated patrols and transnational control systems.

By consolidating these **strategic alliances**, French Polynesia will be able to **improve the management of its marine resources, preserve its ecosystems** and **contribute to more responsible governance of the Pacific Ocean**.

## 6. SAVING THE PACIFIC OCEAN WITH RĀHUI, A REVOLUTIONARY TOOL

Rāhui is an age-old traditional tool for sustainable management, both environmental and community-based. **Based on respect for natural and cultural cycles, it is a historic precursor to sustainable farming.** It is based on a perfect knowledge of ecology, which is essential to ensure sustainability, both in space and time. Rāhui incorporates the notion of protecting species within their ecosystem, including passes, reefs, lagoons, islands or archipelagos, and even the Pacific Ocean during the great migrations of mammals, turtles or tuna. In this way, a holistic and spiritual approach, based on respect for traditions, was adopted.

Marine Protected Areas (MPAs) impose permanent and rigid bans aimed at restricting certain human activities. However, they do not correspond to the extent of the ecosystem of the species that we wish to protect.

Applying the concept of Rāhui to Moana Nui a Hiva would be a revolutionary approach to conservation, inspired by true Polynesian traditions of sustainable resource management. Large-scale Rāhui protection of Moana Nui a Hiva could then be extended to the vastness of the Pacific to save the planet.

**On a Pacific scale, Rāhui would be all the more effective because there are no fixed boundaries between the ecosystems of this region, particularly in an era of climate change.** Capable of protecting the biodiversity, climate and cultures of Pacific peoples, Rāhui **surpasses current protection models in flexibility and effectiveness.** For centuries, it has demonstrated its ability to preserve Moana Nui a Hiva and could become the sustainable and just model for the future of the Pacific Ocean and our planet. As a bulwark against the collapse of biodiversity, it protects the ocean without depriving the people who depend on it.

According to the definitions of the International Union for Conservation of Nature (IUCN) and the ancestral conception of the Rāhui, it is **similar to a category VI Marine Area "to be preserved"**, managed primarily for the sustainable use of natural ecosystems. Its status implies preservation against all forms of pollution, whether physical, organo-chemical or noise, while guaranteeing the sustainability of the natural functions and products necessary for the well-being of the community<sup>86</sup>.

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<sup>86</sup> Henry AUGIER's "Manuel pratique pour sauver la terre - Enjeux, Défis, Espérances", which reproduces the naming guidelines for protected areas proposed by the IUCN.



## 6.A. RĀHUI: TRADITIONAL MANAGEMENT ROOTED IN THE ECOSYSTEM AND CULTURE

Far from being a simple temporary ban, Rāhui **is based on a holistic and dynamic vision of the interactions between species and their environments**. It takes account of natural and cultural cycles, which distinguishes it from modern Western approaches, which are often fragmented and based on rigid rules. In the Polynesian tradition, it is based on a detailed knowledge of local ecology, acquired through centuries of observation and oral transmission, such as the naming of fish.

This system of sustainable management is not limited to the simple preservation of an area or species; it **ensures the regeneration of resources while actively involving local communities**. The reefs, lagoons, channels and islands are integrated into an approach that promotes harmonious coexistence between humans and nature, ensuring future abundance.

## 6.B. AN ALTERNATIVE TO MARINE PROTECTED AREAS : FLEXIBILITY AND EFFICIENCY

Marine Protected Areas (MPAs) are often zones where all human activity is strictly controlled or prohibited. Although they have proved effective in some cases, they present several limitations :

Their boundaries do not always correspond to the actual ecosystems of the species they protect. They impose fixed restrictions that are sometimes difficult to adapt to climate change and the needs of local people. They can be perceived as exclusionary, creating tensions between those involved in conservation and the communities that depend on the sea for their survival.

**Rāhui, on the other hand, relies on precious flexibility. It does not fix protection within a rigid framework, but adapts it to ecological and social realities.** What's more, it directly involves local people in decision-making, giving them back an active role in preserving their environment, unlike MPAs, which are often dictated by external policies.

## 6.C. RĀHUI ON A PACIFIC SCALE: AN ECOLOGICAL AND CULTURAL REVOLUTION

**Applying Rāhui to Te Moana Nui a Hiva, i.e. the whole of the Pacific, would be a major step forward in marine conservation.** The great ocean is a vast interconnected network, where the migrations of marine mammals, fish and turtles extend far beyond the borders of island states. Flexible, community-based management, respectful of local knowledge, would make it possible to establish adaptive protection, capable of evolving with climatic and ecological challenges.

In April 2025, US President Donald Trump signed an executive order authorizing the resumption of commercial fishing in the *Pacific Remote Islands Marine National Monument*, a vast marine sanctuary south-west of Hawaii. This decision calls into question the protection measures put in place by his predecessors and illustrates the existing tensions between exploiting resources and preserving biodiversity. It also highlights the need to promote a management model based on the principle of Rāhui, in which local communities play a central role in the governance of marine areas.

Also, a large-scale Rāhui would allow :

- **Safeguarding biodiversity** by protecting species in their true ecosystem.
- **Fighting the effects of climate change** by providing refuge areas for marine fauna.
- **Preserving Polynesian cultures** by giving communities back the power to manage their marine territories.
- **Combining conservation and subsistence**, maintaining resources for local populations without excluding them from their living environment.



## 6.D. A SUSTAINABLE MODEL FOR THE FUTURE OF THE PLANET

At a time when the world is looking for alternatives to existing conservation systems, Rāhui is emerging as a response that combines tradition and modernity. It is not only an ecological solution, but also a model of social justice, in which the people of the Pacific are at the heart of decision-making, and not mere spectators to management from elsewhere.

**By drawing on this age-old wisdom, Rāhui on a Pacific scale could become a global benchmark, demonstrating that conservation should not be a confrontation between protection and exploitation, but rather striking a balance between these two imperatives.**

If the idea of a global Rāhui gains momentum, it could well become the future of ocean conservation, proving that ancestral knowledge and modern science can work together to protect the planet.

## 6.E. INCREASING SUPPORT FOR INNOVATIVE AND SUSTAINABLE INITIATIVES, SUCH AS SEA WATER AIR CONDITIONING (SWAC) AND OCEAN THERMAL ENERGY (OTE)

For the institution, **SWAC** and **OTE** are two innovative technologies that exploit marine resources to reduce electricity consumption and limit the carbon footprint.

Adopting these solutions increases the use of renewable energies and reduces environmental impact while optimizing the use of local resources.

**CESEC** therefore **recommends supporting their development** through several initiatives :

1. **Encourage their adoption in public infrastructures** (schools, hospitals, cultural centers).
2. **Introduce financial incentives** for companies and hotels wishing to equip themselves.
3. **Strengthen scientific cooperation** to identify the best locations.
4. **Raise awareness and train local stakeholders** to ensure effective, long-term implementation.

By integrating **SWAC** and **OTE** into its energy policies, French Polynesia could become a model of sustainable innovation, combining modernity and environmental protection while consolidating its energy autonomy.

## 6.F. RAPIDLY DEPLOY PROJECTS DEDICATED TO HELPING ISLAND SOCIETIES ADAPT TO CLIMATE CHALLENGES

**CESEC** stresses the urgency of rapidly deploying projects or programs focusing on adapting to climate challenges, such as the MaHeWa project, to **better understand and anticipate the impacts of marine heatwaves on ecosystems, island populations and economic activities, such as pearl farming, a key sector of the Polynesian economy.**

Faced with episodes of extreme ocean warming, it is essential to adopt a proactive approach that combines **scientific research, ecological innovation and appropriate governance.**

The institution therefore recommends **mobilizing local and international stakeholders**, by encouraging collaboration between Polynesian communities, scientific institutions, NGOs and government bodies, to ensure concerted and effective management of the project. It also recommends that **innovative financing mechanisms be** put in place, combining public funds, private investment and international aid, to structure a rapid and sustainable response to environmental challenges.



Finally, CESEC stresses the need to **develop an appropriate regulatory framework** for monitoring ocean temperatures, regulating maritime activities and integrating ancestral knowledge into conservation strategies. Through this comprehensive approach, the MaHeWa project would become a key tool for **ensuring the resilience of Polynesian marine environments in the face of climate change.**



*Pearl harvesting on a pearl farm in TIKEHAU · 📷 Grégoire LEBACON*





# CONCLUSION







CESEC believes that **the sustainable management of Te Moana Nui a Hiva, our marine heritage, is at the heart of major challenges**. It considers that the preservation and enhancement of marine environments – from coral reefs and lagoons to deep-sea areas – are of crucial strategic, environmental and economic importance.

In the context of global warming, water acidification and rising sea levels, ecosystems are subject to ongoing degradation, leading to coral bleaching, coastal erosion and disturbances to lagoon systems. At the same time, pressures from plastic, chemical and hydrocarbon pollution are exacerbating these disturbances. In addition, the unregulated exploitation of fishery resources is having a major impact on the balance of these fragile areas.

In economic terms, our Exclusive Economic Zone (EEZ), with its immense potential, offers development prospects in key sectors such as fishing, pearl farming, maritime tourism, marine renewable energies and deep-sea resources. However, CESEC points out that this last asset cannot be exploited sustainably without rigorous and reasoned resource management. It is determined that economic development should be accompanied by effective preservation of the natural marine environment in all three dimensions : space, pelagos and benthos<sup>87</sup>.

For CESEC, **combining modern technologies, port infrastructures and surveillance practices with the preservation of traditional knowledge – particularly through cultural mechanisms such as the Rāhui – is the only way to embrace innovation and tradition, to ensure the sustainability of marine resources**. This initiative is fully aligned with the United Nations' Sustainable Development Goal 1, which aspires to "*eradicate poverty in all its forms*" by ensuring the sustainable management of resources vital to the survival of populations, as well as with Sustainable Development Goal 14, which aims to "*conserve and sustainably use the oceans, seas and marine resources for sustainable development*".

#### **Call to action: CESEC's eight priorities**

In the face of these complex and interdependent challenges, **it is imperative to take proactive and unified action in favor of Te Moana Nui a Hiva**. CESEC's roadmap is based on these eight priorities :

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<sup>87</sup> Sea surface area, pelagos: water column, benthos: ocean floor.



Fishing with nets - Tahaa · 📷 Stéphane MAILION

## 1. Integration of maritime education and youth involvement :

CESEC affirms that education is the cornerstone of the sustainable management of marine resources. The organization emphasizes **the development of Marine Education Areas (MEAs)**, which are immersive experiences designed to raise awareness among the younger generation about the issues involved in preserving ocean ecosystems.

CESEC also suggests to **establish a *Lycée de la Mer* (Maritime High School)**, which would offer specialized training in sea-related professions, such as marine ecology, oceanographic sciences, fisheries resource management, and sustainable aquaculture. The school will incorporate the teaching of traditional Polynesian knowledge, particularly Rāhui, thus ensuring the transmission of ancestral practices.

These initiatives are designed to **train a generation that can seamlessly balance scientific innovation with respect for traditions**, ensuring the sustainable management of marine resources. Combining modernity and ancestral knowledge, education becomes an essential lever for preserving the oceans while actively involving local communities.

## 2. A ban on drifting fish aggregating devices (FADs) in international waters

CESEC stresses the importance of **extending the ban on drifting FADs, already in place in the Polynesian EEZ, to international waters** to better protect marine biodiversity and limit pollution.

This recommendation is accompanied by several essential measures: a total ban, increased penalties, the development of environmentally-friendly alternatives, greater international cooperation and awareness-raising among those involved in the sector. The aim is to ensure sustainable management of fisheries resources and preserve marine ecosystems for future generations.

### 3. Sustainable management of lagoons and maritime areas

Sustainability requires precise organization of areas where there are conflicts of use.

CESEC emphasizes **the pressing need to adopt a "coastal" law** that would regulate coastal development within territorial waters (up to 12 nautical miles from the shore), establish strict environmental standards and support local initiatives to safeguard marine resources. Integrated management, inspired by the Polynesian Rāhui model and the Tainui Atea managed marine area, will enable adaptive protection based on observing natural cycles and engaging local communities. This model aims to reconcile sustainable exploitation and conservation, by giving local people back an active, decision-making role in the sustainable management of their marine resources. French Polynesia could become a model for the effective governance of its lagoons and coastline.

### 4. Exploration and scientific research on the seabed must be accelerated

**CESEC stresses the urgent need step up scientific exploration of the deep seabed to gain in-depth scientific knowledge that will enabling more effective protection of these areas.**

It recommends the use of modern tools, accurate mapping and a strict legislative framework to ensure responsible exploration. CESEC stresses the critical importance of anticipating ecological and economic impacts through in-depth studies and enhanced international cooperation. Finally, it calls for clarification of the governance of strategic resources to safeguard French Polynesia's sovereignty against external pressures.

The institution is calling for a swift response to the challenges of deep-sea exploration, with a focus on strengthening governance and resource protection, particularly in the light of the Cook Islands' recent partnership with China.



Fenua AIHERE - Tautira · 📷 Ra'i MAO







## 5. Strengthening regional and international cooperation

As ocean management is a shared responsibility, CESEC supports a collaborative approach through **harmonized standards and the exchange of expertise** aimed at strengthening regional cooperation on ocean management. **These strategic partnerships** are based on the pooling of monitoring and research resources, as well as the exchange of scientific data.

This approach will enable us to develop a coordinated and effective response to the challenges posed by uncontrolled fishing, pollution and the unregulated exploitation of marine resources.

## 6. Saving the Pacific Ocean with Rāhui

Among all the initiatives, the institution is keen to place particular emphasis on **promoting Rāhui on a Pacific Ocean scale**, a traditional management framework of Polynesian origins.

It is an effective solution for the regeneration of marine resources thanks to its flexible and adaptable approach, which enables dynamic conservation and also considers the ecological cycles and migrations of species.

Faced with the environmental challenges of the Pacific region, its extension to the whole ocean is essential to preserve marine ecosystems threatened by overfishing and climate change.

Based on ancestral wisdom, CESEC believes that **Rāhui applied to the entire Pacific Ocean**, recognized as **a Marine Area "to be Preserved"** for sustainable use of natural ecosystems, could **become a global model**. This approach demonstrates that preservation is based on striking a balance between protection and sustainable use, rather than antagonism between the two.

## 7. Support for innovative and sustainable initiatives, such as SWAC and OTE

CESEC advocates the development of innovative SWAC and OTE technologies through several initiatives, including their integration in public infrastructure, the introduction of financial incentives for businesses and hotels, and the strengthening of scientific cooperation to optimize the areas in which they are installed. **By truly integrating these solutions into energy policies**, French Polynesia could become a **model of sustainable innovation**, reconciling modernity and environmental preservation, while strengthening its energy autonomy.

## 8. Rapid deployment of projects focusing on climate challenges adaptation

CESEC is calling for swift action to roll out the MaHeWa project, which aims to anticipate the effects of marine heatwaves on ecosystems, island populations and essential economic activities, particularly fishing, aquaculture and pearl farming. To ensure effective management of the project, CESEC recommends **mobilizing local and international stakeholders, introducing innovative financing and developing an appropriate regulatory framework**, including ocean temperature monitoring, the regulation of maritime activities and the integration of ancestral knowledge into conservation strategies.







### *Towards a sustainable future: a holistic and collective vision*

CESEC advocates sustainable development in French Polynesia, based on a combination of technological innovation and ancestral knowledge. **The development of Rāhui, an ancestral marine preservation mechanism, is essential for participative governance adapted to environmental issues, and its extension to the whole of the Pacific could strengthen the protection of marine ecosystems on a larger scale.** For the institution, success lies in the rapid and coordinated implementation of the eight strategic axes presented, enabling climate and ecological challenges to be transformed into sustainable opportunities.

### *Nā te mau Tiaki moana e ha'amau i te Rāhui: the guardians of the ocean will establish the Rāhui.*

CESEC calls on all stakeholders – institutions, businesses, researchers, associations and communities – to turn these strategic guidelines into concrete actions.

The institution affirms that a holistic and collective vision is imperative. We believe that only an intelligent combination of modernity and tradition, supported by enhanced regional and international cooperation, can create a development model that is both resilient and prosperous. By utilizing the identified levers today, we can ensure a harmonious future for present generations and those to come, where the richness of the oceans is compatible with economic viability and respect for natural balance.



Comparison of French Polynesia's EEZ with the Europe





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# APPENDIX

The background of the page is a deep blue underwater photograph. In the upper half, a massive, dense school of small, silvery fish swims towards the viewer. Below them, in the lower half, is a detailed view of a coral reef with various types of coral, including branching and table corals. The lighting is soft, creating a serene and mysterious atmosphere.



## An action focused conference

UNOC3 will be focused on « Accelerating action and mobilizing all actors to conserve and sustainably use the ocean » and will seek to support the implementation of Sustainable Development Goal 14 (SDG14), with three main priorities, in order to produce an ambitious Nice Ocean Action Plan :



### Priority 1

Work towards the successful completion of ocean-related multilateral processes to raise the level of ambition for ocean protection.



### Priority 2

Mobilizing funding for SDG14 and supporting the development of a sustainable blue economy.



### Priority 3

Strengthen and better disseminate marine science knowledge for better policy-making.

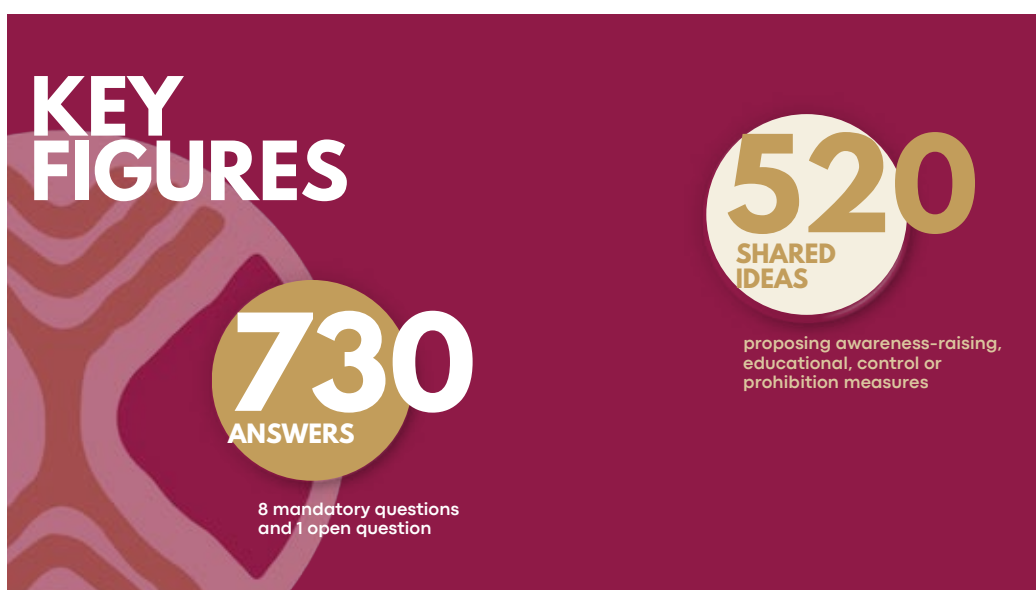
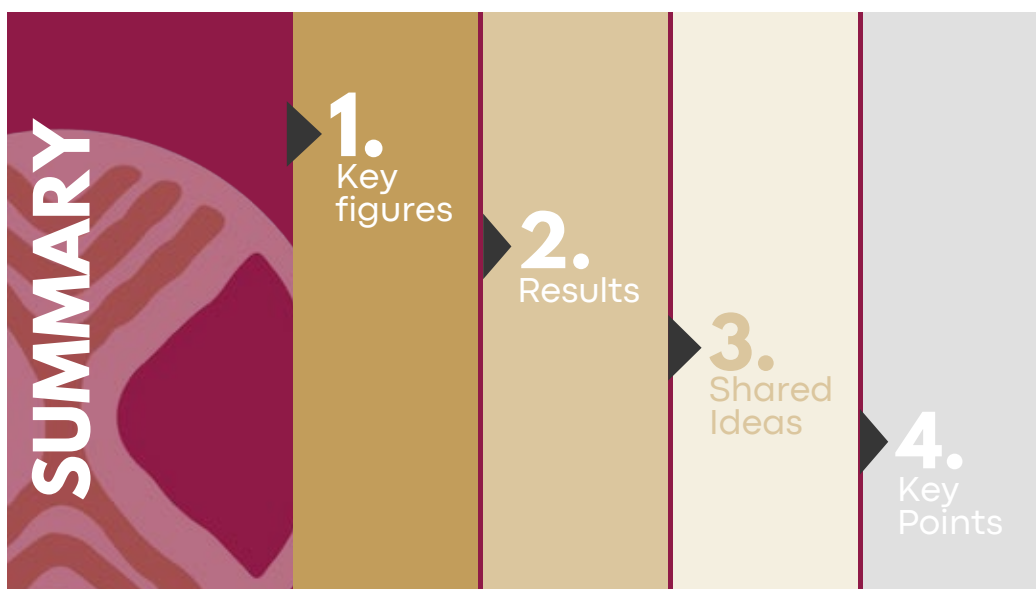
**The Global Goals (GG) n°14, titled « Life Below Water »,** aims at conserving and sustainably using oceans, seas, and marine resources. Here are the main associated specific goals :

1. **Reduce marine pollution** : Prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.
2. **Protect and restore ecosystems** : Sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.
3. **Reduce ocean acidification** : Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.
4. **Sustainable fishing** : Effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.
5. **Conserve coastal and marine areas** : Conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.
6. **Increase scientific knowledge, research and technology for ocean health** : Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.
7. **Increase the economic benefits from sustainable use of marine resources** : increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

Global Goal 14 highlights the need to reinforce international cooperation in order to preserve marine biodiversity and guarantee a sustainable and fair exploitation of its resources.









## RESULTS

### WHAT IMPORTANCE SHOULD WE GIVE TO PROTECTING OUR OCEAN IN OUR DAILY LIVES?

For 96.7% of participants, protecting the ocean is a priority.

**54%**  
Absolute  
Priority

**42,6%**  
Very  
Important

**96,7%**

## RESULTS

### WHAT ARE THE BIGGEST DANGERS THAT THREATEN OUR OCEAN?

For a very large majority of participants, the two greatest dangers threatening our Ocean are, in order, plastic pollution and waste, then intensive fishing and overexploitation of resources.

**85%**  
Plastic  
Pollution

## RESULTS

### IS THE EXPLOITATION OF POLYNESIAN MARINE RESOURCES COMPATIBLE WITH THE PROTECTION OF OUR OCEAN?

For 68.8% of participants, the sustainable exploitation of marine resources is compatible with the protection of the Ocean.

**55,6%**  
Yes, but...

**25,2%**  
No !

**13,2%**  
Yes !

**68,8%**

## RESULTS

### HOW TO REGULATE THE EXPLOITATION OF SEABED RESOURCES?

25,5%  
Supervised  
Authorization

37,1%  
Total  
Prohibition

29,5%  
Promote  
Research

5,8%  
In favor

Only 37.1% of participants are in favour of a ban on the exploitation of the seabed. 29.5% of them favor scientific exploration while 25.5% of them are in favor of supervised exploitation. In the end, almost 61% of participants would be in favor of at least exploring the seabed.

## RESULTS

### WHAT PRIORITY ACTIONS SHOULD BE IMPLEMENTED TO PROTECT OUR OCEAN?

STRENGTHENING THE REGULATION AND  
MONITORING OF MARINE ACTIVITIES

3

54,4%

STRENGTHENING SUSTAINABLE FISHING AND  
ECOSYSTEM-FRIENDLY PRACTICES

4

53%

REDUCING PLASTIC POLLUTION AND  
IMPROVING WASTE MANAGEMENT

1

70,4%

RAISING AWARENESS AMONG THE POPULATION, ESPECIALLY  
YOUNG PEOPLE, ABOUT ENVIRONMENTAL PROTECTION

2

55,2%

DEVELOP MARINE PROTECTED AREAS AND  
STRENGTHEN THEIR MONITORING

5

49,6%

## RESULTS

### HOW DO YOU SEE THE INTEGRATION OF TRADITIONAL KNOWLEDGE IN THE PROTECTION OF OUR OCEAN?

49,6%  
It's  
important

43%  
It's  
essential

6,6%  
It's  
useful

Integrating traditional knowledge, including rāhui, is considered both important and essential by 92.6% of participants.

### RESULTS

#### WOULD YOU BE IN FAVOR OF CREATING NEW PROTECTED MARINE AREAS IN THE FENUA?

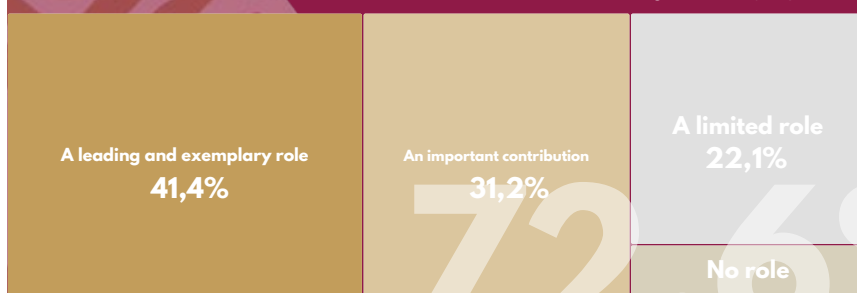
**49,7%**  
Yes, under conditions

For 49.7% of participants, the creation of new protected marine areas is possible under certain conditions and in consultation with local stakeholders.

### RESULTS

#### WHAT ROLE DO YOU ATTRIBUTE TO OUR COUNTRY IN PROTECTING OUR OCEAN ON A GLOBAL SCALE?

According to 72.6% of participants, French Polynesia can make a significant contribution to the protection of the Ocean and even play a leading and exemplary role.



### SHARED IDEAS

#### PRESERVATION AND SUSTAINABLE MANAGEMENT OF AREAS

"Register the Pacific Ocean as a UNESCO world heritage site because of the lung that it constitutes on land."

#### WASTE AND POLLUTION MANAGEMENT

"Supervise and regulate human activities upstream as much as possible (sanitation, housing developments, agriculture, etc.)."

#### EDUCATION, INFORMATION AND AWARENESS

"Educate, educate, educate, the future will come from understanding that we cannot live without the ocean."

#### APPLICATION AND CONTROL OF REGULATIONS

"Establish a lagoon police force."



## SHARED IDEAS

“Protection starts on land with the mobilization of inhabitants, public authorities and associations!”



## SHARED IDEAS

“Joining forces with the Pacific Community to build an Oceanian protection system.”



## SHARED IDEAS

“Educate, educate, educate, the future will come from understanding that we cannot live without the ocean.”





## SHARED IDEAS

“Never mine our seabed”.



## SHARED IDEAS

“Considering the Ocean as a living organism in the eyes of the law.”



## SHARED IDEAS

“Punish and enforce the existing laws”.



## SHARED IDEAS

“Register the Pacific Ocean as a UNESCO world heritage site because of the lung that it constitutes on land.”



## SHARED IDEAS

“Changing our consumption patterns”.



## SHARED IDEAS

“Extend the EEZ of all the Pacific Islands. Let these zones remain for the exclusive benefit of the islands and their populations without the possibility of delegating this exploitation.”



## SHARED IDEAS

“It is absolutely necessary to mix our ancestral knowledge with modern techniques, by mixing the two knowledges, we will be able to move forward better in the protection of our environment.”



## SHARED IDEAS

“Take into account the “rahui” as they say, the seasons so that there is a balanced cycle”.



## WHAT TO LEARN?

Positive

“Thank you for this initiative! Faatoito”

“Māuruuru for giving us the opportunity to express our voice”!

Constructive

## WHAT TO LEARN?

Strengthen the protection of our EEZ from foreign industrial fishermen.

# Strong need for information

## WHAT TO LEARN?

### EDUCATING THE POPULATION AND PUNISHING OFFENDERS

For a very large majority of participants, education, information and awareness are the essential pillar of protecting Our Ocean. In addition to this necessary awareness-raising, there is an obligation to punish environmental damage.

### LIMITING IMPACTS AND PRESERVING AREAS

The issue of proper waste management and pollution related to human activities appears to be very important to those surveyed. It comes in third position among the most important themes. Finally, the preservation of areas, in a logic of sustainable development and resource management, completes this overview of important topics for participants.

# māuruuru



### CESEC 2025 CITIZEN CONSULTATION

#### ANALYSIS

For 97% of those consulted, there is a vital and fundamental link between Polynesians and the ocean, which shapes their identity not only as a three-dimensional space, but also as a cultural, spiritual and existential matrix that must be preserved.

The **Te Moana Nui a Hiva** ocean, which connects the islands, is at once a road, a resource, a navigation route, a memory, a myth and a means of subsistence rooted in ancestral heritage. It is a true living space, a bearer of history, culture and deep spirituality, preserved by the practice of Rāhui.

Plastic pollution and Greenhouse Gases (GHGs), responsible for the degradation of ecosystems and biodiversity, are overwhelmingly rejected by 85% of respondents. This vision, based on a profound harmony with the beauty and purity of the environment, contrasts with the land-based approach of other cultures (Table 4).

Polynesians cannot conceive of their existence outside their vast oceanic continent. The idea of imposing borders, barriers or virtual limits contradicts their ancestral conception of the freedom of living beings, illustrated by the song of whales, the laying of turtles, the silent sovereignty of sharks and the abolition of distances by seabirds.

The peoples of the Pacific claim their oceanic identity as a precious heritage to be passed on to future generations. Thus, although 37.1% of Polynesians advocate a total ban on seabed mining (Table 7), 25.5% would accept this activity if it were strictly regulated.

**Tia'i Moana** (or **Tiaki Moana** in Maori), guardian of the ocean and maritime space now under threat, becomes a warning figure advocating respectful coexistence with all forms of ocean life. Echoing a renewed oceanic wisdom, he is no longer a symbol of the past, but an essential protector of spaces of freedom, dreams and alternative habitat, in a world once called "**paradise blessed by the Gods**".

**All Polynesians consider the integration of traditional knowledge, particularly Rāhui, to be essential or very important for protecting the ocean**, and only 49.7% of those surveyed support the establishment of **Marine Protected Areas (MPAs)**, and then only under certain conditions (Tables 5 and 6).

Despite French Polynesia's vast EEZ, which positions France as the second-largest maritime power in terms of surface area, only 41.4% of respondents feel that the country is playing a leading and exemplary role in the establishment of MPAs, which are perceived as the symbol of a global policy that is poorly aligned with the foundations of Polynesian culture.

Finally, 68.8% of Polynesians believe that resource exploitation can be compatible with ocean preservation (Table 6), and only 37.1% are in favor of a total ban on seabed mining.

In this way, the peoples of the Pacific are reaffirming their oceanic identity as a heritage to be protected and passed on to future generations.

# BALLOT

## NUMBER OF VOTERS

43

## FOR

43

## AGAINST

00

## ABSTENTION

00

**VOTED IN FAVOR : 43**

### ENTREPRENEURS REPRESENTATIVES

- |                    |               |
|--------------------|---------------|
| 1. ANTOINE-MICHARD | Maxime        |
| 2. BENHAMZA        | Jean-François |
| 3. LABBEYI         | Sandra        |
| 4. MOSSER          | Thierry       |
| 5. NOUVEAU         | Heirangi      |
| 6. PLEE            | Christophe    |
| 7. ROIHAU          | Andréa        |
| 8. TREBUCQ         | Isabelle      |
| 9. TROUILLET       | Mere          |

### EMPLOYEES REPRESENTATIVES

- |                 |             |
|-----------------|-------------|
| 1. FONG         | Félix       |
| 2. GALENON      | Patrick     |
| 3. LE GAYIC     | Vaitea      |
| 4. ONCINS       | Jean-Michel |
| 5. POHUE        | Patrice     |
| 6. SOMMERS      | Eugène      |
| 7. TAEATUA      | Edgar       |
| 8. TEHEI        | Vairea      |
| 9. TERIINOHORAI | Atonia      |
| 10. TEUIAU      | Avaiki      |
| 11. TIFFENAT    | Lucie       |
| 12. YIENG KOW   | Diana       |

### DEVELOPMENT REPRESENTATIVES

- |                        |            |
|------------------------|------------|
| 1. ELLACOTT            | Stanley    |
| 2. LAI                 | Marguerite |
| 3. MAAMAATUAIAHUTAPU   | Moana      |
| 4. PEREYRE             | Moea       |
| 5. ROOMATAAROA-DAUPHIN | Voltina    |
| 6. TEMAURI             | Yvette     |
| 7. THEURIER            | Alain      |

### REPRESENTATIVES OF SOCIAL COHESION AND COMMUNITY LIFE

- |                      |           |
|----------------------|-----------|
| 1. BAMBRIDGE         | Maiana    |
| 2. CARILLO           | Joël      |
| 3. CHUNG TIEN        | Tahia     |
| 4. FOLITUU           | Makalio   |
| 5. KAMIA             | Henriette |
| 6. LUCIANI           | Karel     |
| 7. NORMAND           | Léna      |
| 8. PORLIER           | Teikinui  |
| 9. RAOULX            | Raymonde  |
| 10. TERIITERAAHAUMEA | Patricia  |
| 11. VITRAC           | Marotea   |

### ARCHIPELAGOES REPRESENTATIVES

- |             |            |
|-------------|------------|
| 1. BARSINAS | Marc       |
| 2. HAUATA   | Maximilien |
| 3. NESA     | Martine    |
| 4. WANE     | Maeva      |



# THE MEETINGS

## 17 (SEVENTEEN) MEETINGS HELD ON :

**February 11, 13, 18, 20, 25, 27 · March 4, 6, 11, 13, 25, 27 · April 3, 24, 29  
May 6 and 9, 2025**

**by the "Economy" commission whose composition is as follows:**

### MEMBER BY RIGHT

Mrs Voltina ROOMATAAROA-DAUPHIN  
Président of CESEC

### BUREAU

- |                                |                |
|--------------------------------|----------------|
| • BENHAMZA Jean-François ..... | Chairman       |
| • TIFFENAT Lucie .....         | Vice président |
| • KAMIA Henriette .....        | Secretary      |

### RAPPORTEURS

- |                   |                  |
|-------------------|------------------|
| • GALENON Patrick | • TROUILLET Mere |
|-------------------|------------------|

### MEMBERS

- |                          |                       |                       |
|--------------------------|-----------------------|-----------------------|
| • ANTOINE-MICHARD Maxime | • MONTFORT Christophe | • TEFAATAU Karl       |
| • BUTTAUD Thierry        | • NESA Martine        | • TEMAURI Yvette      |
| • CARILLO Joël           | • PEREYRE Moea        | • TERIINOHORAI Atonia |
| • CHUNG TIEN Tahia       | • PLEE Christophe     | • UTIA Ina            |
| • DROLLET Florence       | • PROVOST Louis       | • VIVISH Manate       |
| • ELLACOTT Stanley       | • RAOULX Raymonde     | • WANE Maeva          |
| • FOLITUU Makalio        | • SOMMERS Eugène      |                       |
| • FONG Félix             | • TAEATUA Edgar       |                       |

### MEMBERS WHO ALSO TOOK PART IN THE WORK

- |                 |                          |
|-----------------|--------------------------|
| • LUCIANI Karel | • MAMAATUAIAHUTAPU Moana |
|-----------------|--------------------------|

### CORPORATE SECRETARIAT

- |                         |                               |
|-------------------------|-------------------------------|
| • BONNETTE Alexa .....  | Corporate Secretary           |
| • NAUTA Flora .....     | Assistant Corporate Secretary |
| • LORILLOU Tekura ..... | Technical advisor             |
| • NORDMAN Avearii ..... | Session secretary             |
| • BIZIEN Alizée .....   | Meeting secretary             |



# THE GUESTS

The President of the Economic, Social, Environmental and Cultural Council of French Polynesia, The Chairman and members of the "Economy" commission would like to thank them for their contribution to the preparation of this report,

## Particularly,

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- **Madame Mahanatea GARBUTT**, conseillère technique
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- **Madame Teura IRITI**, maire

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- **Monsieur Alex GENICOT**, administrateur principal des affaires maritimes

### **Au titre du Service des affaires maritimes (SAM PF) : *Maritime Affairs Service of French Polynesia***

- **Monsieur François AMAUDRIC DU CHAFFAUT**, chef de la cellule surveillance des activités maritimes

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- Madame Teumere MU, directrice des achats, de la logistique, du biomédical, du service technique et du patrimoine

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- Madame Rava SACHET, directrice du développement

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## Au titre de la Société Airaro :

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- **Monsieur David WARY**, co-fondateur

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- **Monsieur Benoit LAYRLE**, directeur général

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## Au titre du Cluster maritime de Polynésie française (CMPF) : *International Union for Conservation of Nature*

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- **Madame Jade GOUIN**, vétérinaire et coordinatrice des programmes de conservation à Te Mana o te Moana
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## Au titre du Syndicat des activités nautiques en Polynésie française TAI MOANA :

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## Au titre de l'Association des armateurs de pêche hauturière de Polynésie française :

- **Monsieur Raufea ARIPEU**, membre

## Au titre des personnes qualifiées :

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- **Monsieur René GALZIN**, retraité enseignement supérieur et recherche
- **Monsieur Heremoana MAAMAATUAIAHUTAPU**, ancien ministre de la culture, de l'environnement, de l'artisanat, de l'énergie et des mines





# *‘O TE MITI NEI RA TE MARAE MO’A ROA.*

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THE SEA, THE MARAE,  
THE ULTIMATE SANCTUARY.

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LA MER, LE MARAE,  
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