



# PACPATH

Ocean Sciences, Climate and Sustainability Pathways  
Sciences océaniques, climat et trajectoires de durabilité



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# Our Corals

Food, Shelter, Habitat, Tourism and recreation, Undiscovered resources



©F. Houlbrequé, IRD



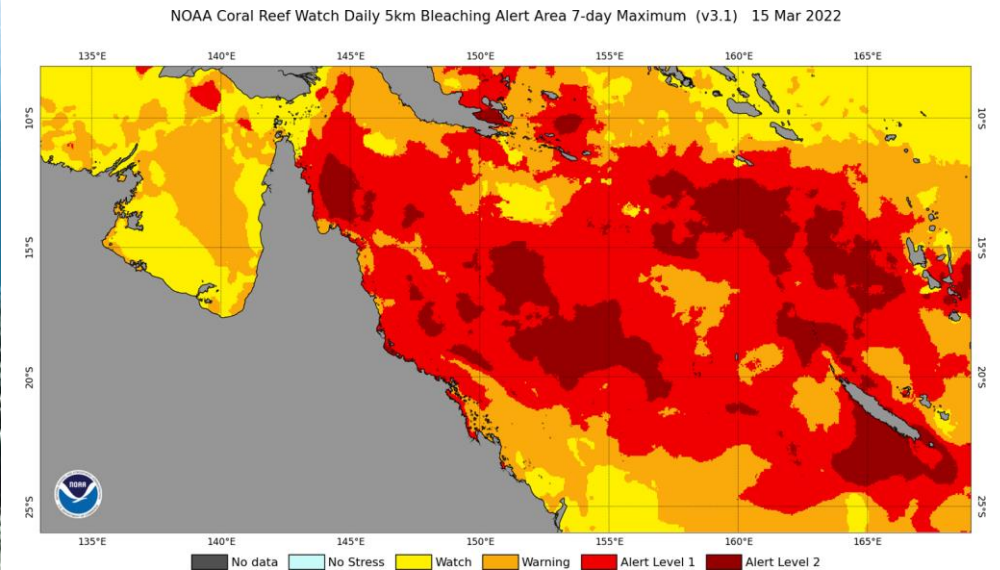
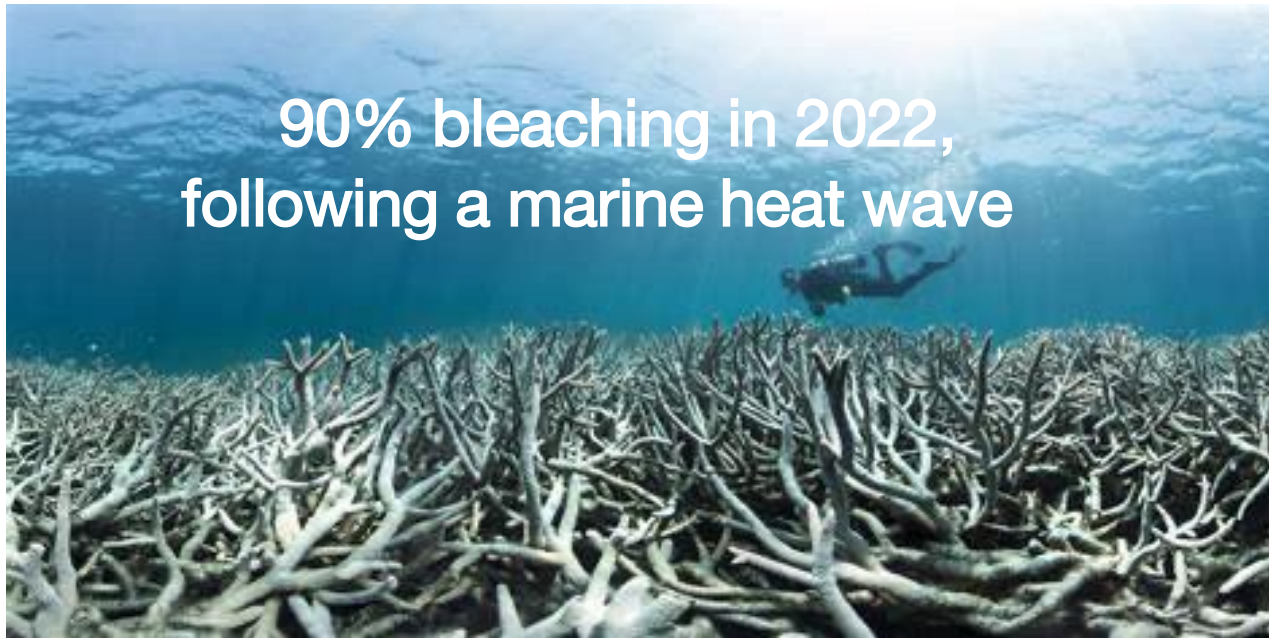
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# Our Corals

## IPCC:

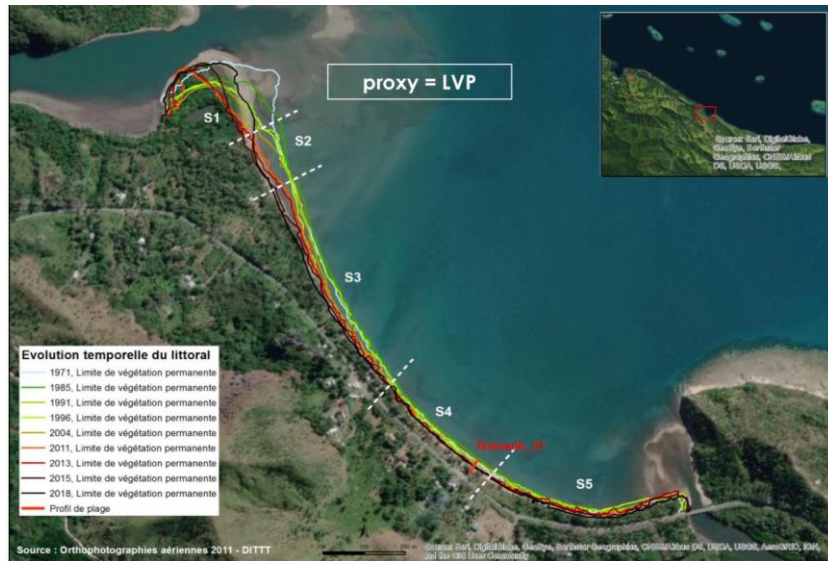
- In a +1.5°C world, between 10 and 30% of coral reefs will survive.
- In a world of +2°C, warming that could be reached around 2050, almost all coral reefs on Earth will die.



# Our Coasts

IPCC 2022 15.3.3:

Projected Risk of reduced habitability of small islands caused by: Submergence, Destruction of settlements and infrastructure, Loss of cultural resources and heritage, Freshwater insecurity



Analyse de l'évolution diachronique du trait de côte et de sa segmentation (site de Tewaadé-Tipindjé de 1971 à 2018)

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St Joseph, Ouvéa, Copyright OBLIC/Gouvernement NC



# Pacific Islands Vulnerability and Needs for Sustainable Pathways

Environmental vulnerability

(e.g. coastal erosion, land degradation, loss of biodiversity)

Physical vulnerability

(e.g. roads, bridges, houses, coastal protection etc)

Economic vulnerability

(e.g. external shocks such as global oil prices & conflicts)

Social vulnerability

(e.g. food security, income generation)

**These vulnerabilities are prevalent in the PICs, and their scale & severity varies from one country to another – require sustainable pathways to address them.**

# Belmont Forum funding: “Pathways for Sustainability”

Recognizes that an integrated approach is necessary, with components including:

Economy, technology, institutions, environment,  
climate, biodiversity, human well-being  
Social sciences, natural sciences, societal partners

Given the complexity, a co-design approach is essential: The research and products should be designed together, with a diverse group of stakeholders

**BELMONT**  
**F O R U M**

future<sup>earth</sup>



2021  
2030

United Nations Decade  
of Ocean Science  
for Sustainable Development

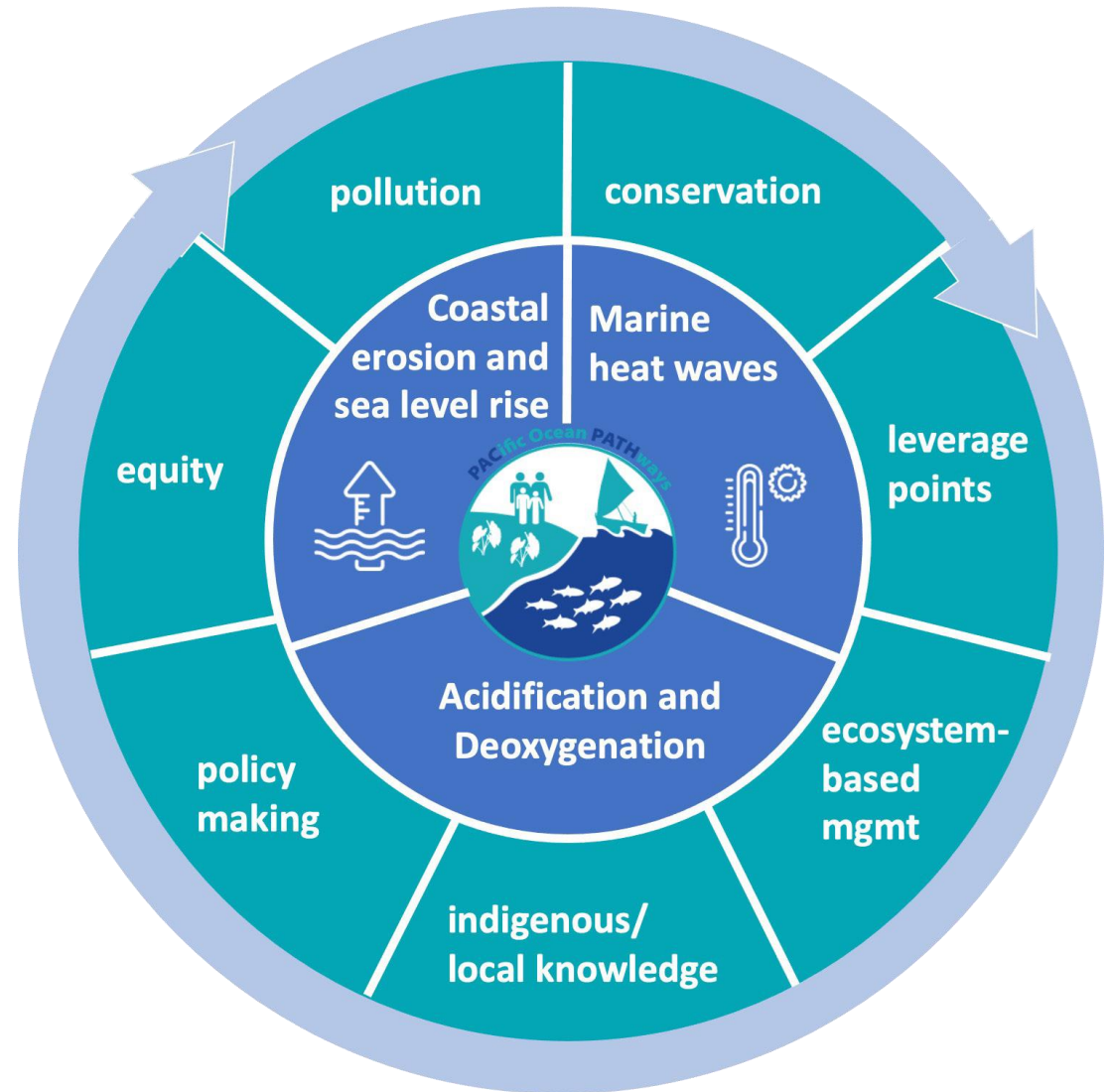
The ocean we need for the future we want



# PACPATH Objective

Co-design ocean sustainable development pathways for Fiji and New Caledonia, meaning:

A robust strategy for sustainability  
Research projects and indicators



## 2-Approach through 5 aspects

**Elisabeth Holland**, PACE-SD,  
USP, Fiji  
**Karina von Schuckmann**,  
Mercator Ocean  
international, France



**1 SDG14 in  
Oceania**

**2 Actors and  
relationships**



**Louis Celliers**,  
GERIC Climate  
Service Center,  
Germany

**3 Indicator  
codesign**



**Heath Kelsey**, University of  
Maryland Center for  
Environmental Science, USA  
**Sebastian Ferse**, Leibniz Centre  
for  
Tropical Marine Research,  
Germany

**4 Policy making and  
governance**



**Pierre-Yves Le  
Meur**,  
SENS, IRD New  
Caledonia

**Methods for interactions in  
transdisciplinarity**

**Maraja Riechers**,  
Faculty of  
Sustainability,  
Leuphana, Germany



**Maria Manez Costa**,  
Climate  
Service Center,  
Germany



### 3-Agenda

To design concrete *sustainability pathways* for the ocean necessitates:

1. agreeing on a common understanding of the most important attributes, resources and services
2. co designing a socio-environmental report card
3. setting a roadmap with groups of interest to fund coherent research and actions for implementation

April 25-26  
2022  
Kick off

October 18-24  
2022: Stakeholder  
workshop, New  
Caledonia

February 6th-  
13th 2023:  
Stakeholder  
workshop, Suva

2023 Fund  
chasing, Specific  
workshops and  
Projects  
submissions

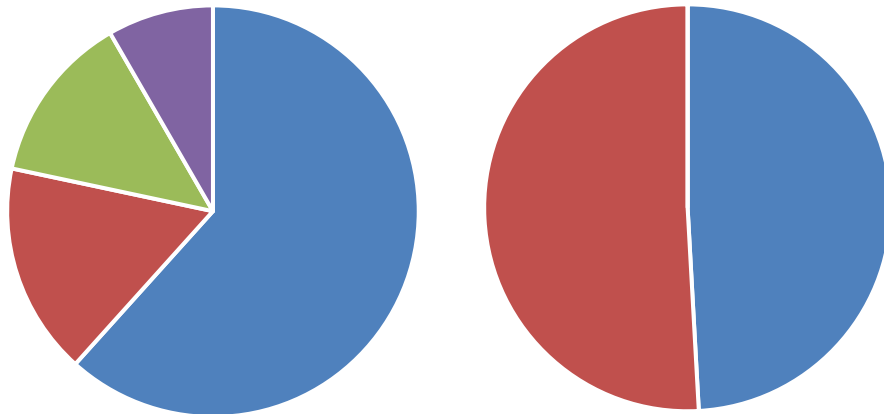
# First PACPATH stakeholder workshop

## Noumea, Oct 18-24 2022



# First PACPATH stakeholder workshop

## Noumea, Oct 18-24 2022



■ New Caledonia ■ Fiji  
■ Regional - South Pacific ■ International

■ Female ■ Male

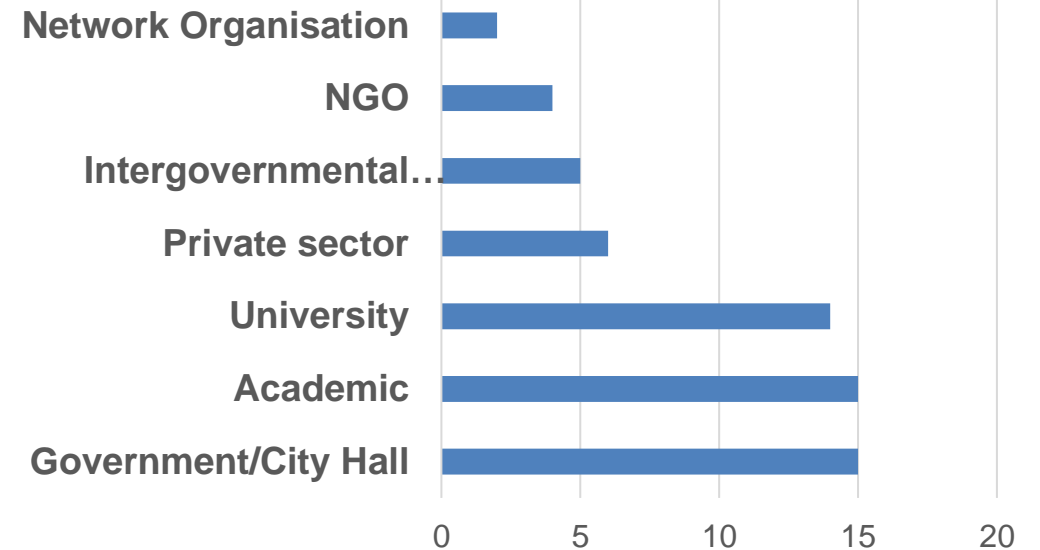
## Stakeholder identification

For relevance to the objectives & topics

For a group of 45 people

For a balance between sectors

For a moderate carbon budget





# Phase 1: Values and Threats





# Values results



A word cloud visualization of values results. The words are arranged in a dense, overlapping cluster. The colors are primarily dark blue and teal. The words vary in size, with 'sustainable management', 'food security', 'development', and 'human communities' being the largest. Other words include 'biodiversity', 'reef and ocean health', 'governance', 'equity', 'research and innovation', 'traditional practices', 'clean water', 'economy', 'resilience', 'monitoring', 'culture', 'protected areas', 'sea level rise', and 'recreation'.

clean water  
biodiversity  
governance  
reef and ocean health  
sea level rise  
protected areas  
equity  
research and innovation  
traditional practices  
recreation  
sustainable management  
food security  
development  
human communities  
economy  
resilience  
monitoring  
culture

# Threats results





## Phase 2-Indicators, Data, Policies: towards a socio-environmental card



# Outcome of this workshop

Hear the stakeholders: Science driven versus management driven

Better understanding of different viewpoints and needs

Most important  
values

Human first

Habitat and  
food security

Common issues  
and groups

Coastal  
erosion and  
sea level

Reef (Coral/  
Mangrove/  
Seagrass)

Socio  
environmental  
report

See below


Policy  
frameworks

Shared  
understandin  
g

# New Caledonia Report Card: draft in progress

**Coastal communities in New Caledonia are facing displacement and reduced food security**  
*This report card is meant to highlight the crisis affecting coastal communities and provide potential solutions.*

Eviction of coastal areas in New Caledonia is a serious and urgent issue that is forcing some communities to relocate further inland, and results in the loss of customary and sacred lands. This threatens economically valuable areas, and cultural heritage in Vanuatu communities. Facing food availability is leading to uncertainty about the future of food sources for many coastal communities in New Caledonia. Additionally, pollution from reefs can damage coral reefs, seagrasses, and mangroves. These ecosystems are affecting coastal communities now and are becoming more urgent as the effects of climate change become more apparent. This document highlights these issues, provides potential actions that coastal communities can take to reduce impacts of climate change, and presents a potential framework for measuring progress over time.




**Climate change is accelerating problems for coastal communities**  
*Important environmental changes are already happening*

As sea levels rise, the protection of coastal areas provided by sea grasses, mangroves, and coral reef structures are being eroded. Increased erosion problems in coastal areas. A small increase in sea level can have big effects especially during storms. Additionally, coral reef waves can damage corals from bleaching. Coral provides high quality fish habitat and damage to reefs can lead to reductions in its availability for the communities that rely on them.

**Land, sea, and people are connected**  
*The conditions of land, sea, and people can't be separated*

What happens on land affects people living in the coast, and can cause direct and indirect. Water pollution can affect people living in the coast, and can cause damage to coastal ecosystems like coral reefs, seagrasses, and mangroves. These ecosystems affect the coastal communities that rely on fish resources for food, and on coral reefs for their protection from erosion and flooding. As sea levels rise, this coastal protection is being lost. In addition, periods of high water temperature near coral reefs can cause permanent damage to the reefs. Coastal communities and the fish resources that live in these ecosystems. Carbon dioxide (CO2) in the atmosphere can make the acidity in ocean waters, which can make it hard for corals to regrow or to build new structures. The figure below illustrates how the effects of these processes are connected.



**The PacPath project seeks to identify pathways to sustainable coasts**  
*The report card process is collaborative and includes a diverse group of stakeholders*

Addressing the pressing issues affecting coastal communities requires a process that includes members from all parts of society. The PacPath project seeks to engage a diverse group of stakeholders to identify the most pressing problems, identify ways to address these issues, and develop a plan of action to local decision makers. PacPath held its first workshop in Noumea, in October 2022, and will continue to hold workshops in other parts of New Caledonia. Participants identified important concerns for the coastal communities and identified potential solutions that can help address their status. An important part of the process is to bring together community leaders, resource managers, and natural and social scientists to work together and develop solutions together. By bringing these groups as together, we can understand the effects of climate change from sea level rise, warming ocean waters, and ocean acidification, and how these effects are affecting coastal communities. Understanding PacPath intends to bring this process to other coastal communities, and to identify clear pathways to sustainable coastal communities.



**Content:** What is the issue; how good or bad is the situation; what we would need to do

**Target:**  
Funding agencies, managers, politics

**Asset:** It is inclusive, integrated and based on multi actor, multicultural expert views



**Example locations illustrate how coastal communities are being affected by climate change in New Caledonia**  
*These processes are typical of what is occurring throughout coastal areas*

Coastal erosion, water quality problems, and poor conditions of coral reefs, seagrasses and mangroves are occurring in many locations on the New Caledonia coast. We've identified four locations that illustrate these issues and the impacts they have on coastal communities.



Locations on the East Coast of New Caledonia demonstrate problems where openings of coastal embankments are partially covered creating poor water circulation, poor water quality, and high water temperatures which has led to mass fish kills in the past. These problems can be increased in areas where coral reefs are poorly managed or are affected by waste from mining activities. This causes flooding, erosion, bed erosion, and poor soil health, which can force people to move to areas in these bays where flood risk is lower and where soil condition is good and crops are harder to grow.



Extensive erosion in the coastal area near Noumea, coastal erosion has recently caused severe damage to property and property in the damaged area and surrounding areas is affected. Many people have been forced to relocate, and sacred areas have been lost. This is a serious problem for the community and the government. The erosion is caused by a combination of factors including sea level rise, coral reef degradation, and poor management of coastal areas. The erosion is a serious problem for the community and the government. The erosion is caused by a combination of factors including sea level rise, coral reef degradation, and poor management of coastal areas.



Coastal areas on the West Coast of New Caledonia illustrate how communities are affected by erosion and poor management. When erosion and coastal erosion occur in watersheds that are poorly managed, they can result in very high freshwater and sediment inputs to coastal waters. The freshwater can cause severe damage to the coastal ecosystems. The sediment can cause damage to the coastal ecosystems. This reduces the ability of the reefs to support high fish densities that coastal communities depend on for food.



In coastal areas near Noumea, coastal erosion has recently caused severe damage to property and property in the damaged area and surrounding areas is affected. Many people have been forced to relocate, and sacred areas have been lost. This is a serious problem for the community and the government. The erosion is caused by a combination of factors including sea level rise, coral reef degradation, and poor management of coastal areas. The erosion is a serious problem for the community and the government. The erosion is caused by a combination of factors including sea level rise, coral reef degradation, and poor management of coastal areas.





## Next steps

- **Socio-environmental card for Noumea: finalization process with iterations**
- **Socio-environmental card for Fiji: workshop 02/2023**
- **Preparation PACPATH Phase 2: roadmap**
- **Extension to other Pacific Island Countries with SPC, USP and SPREP**
- **Identification of sites and specific projects**
  - WG1: coastal habitat and erosion
  - WG2: food security and reef ecosystem



Thank you !

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## Xtra slides



# IPCC 2022

The scientific evidence is unequivocal:

Climate Change is a *threat* to human well-being and global planetary health and *any further delay in concerted global action on adaptation and mitigation will miss a short and rapidly closing window of opportunity* to ensure a liveable and sustainable future for all.

Les preuves scientifiques sont sans équivoque:

Le Changement climatique est une *menace* pour le bien être humain et la santé planétaire et *tout nouveau retard dans l'actions mondiale concertée pour l'adaptation et l'atténuation manquera une fenêtre d'opportunité qui est brève* et qui se referme rapidement pour assurer un avenir vivable et durable pour tous.