



# CORAL REEF RESTORATION

AS A STRATEGY TO IMPROVE  
ECOSYSTEM SERVICES

*A guide to coral restoration methods*



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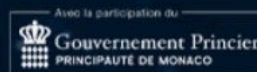
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Environment Assembly of the  
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## Report Structure

1

### WHAT IS CORAL REEF RESTORATION?

Part 1 defines coral reef restoration in the context of climate change and describes current coral reef restoration goals and methods.

2

### CURRENT CHALLENGES AND OPPORTUNITIES

Part 2 presents opportunities and challenges, particularly around scale, standards, ecosystem integrity, and socio-cultural considerations.

3

### TO RESTORE OR NOT TO RESTORE - A CALL FOR REALISM

Part 3 calls for realism and advises caution against the unplanned use of coral reef restoration, especially on reefs where local disturbances cannot be mitigated.

4

### RECOMMENDATIONS

Part 4 highlights general recommendations on using coral reef restoration as a management strategy, focusing on steps to take prior to restoration in the planning and design phase, as well as in the implementation and monitoring phases. Recommendations that are specific to goals and methods are also highlighted.

5

### CONCLUSIONS AND ACTION PLANS

Part 5 draws general conclusions and links to trusted sources of information.

6

### CASE STUDIES

Part 6 presents six case studies of coral reef restoration efforts in different parts of the world.



POLICY BRIEF

# CORAL REEF RESTORATION TO IMPROVE ECOSYSTEM SERVICES

## POLICY BRIEF

JANUARY 2021

**Context**

Coral reefs provide ecosystem goods and services worth hundreds of billions of dollars globally every year, but they are rapidly declining in the face of rising climate and anthropogenic disturbances. The 5<sup>th</sup> Global Biodiversity Outlook by the Convention on Biological Diversity (CBD) recognises failure to achieve previous targets for coral reef conservation and classifies corals as most at risk of extinction of all assessed groups. According to recent IPCC reports, up to 90% of coral reefs could be lost by 2050, even if warming is limited to an increase of 1.5°C. Urgent climate action is required along with bold local management to halt declines and support coral reef resilience now and into the future.

Coral reef restoration can be used as part of a broader management strategy to combat declines in coral health globally. It can also be used as a mechanism to help countries deliver on national and international commitments under various multilateral environmental agreements. A recent report from the International Coral Reef Initiative (ICRI) revealed that 88% of ICRI members were interested in the development of new international commitments and policies specifically dedicated to coral reef restoration.

In 2019, the United Nations Environment Assembly adopted Resolution 4/13 requesting UNEP and ICRI to define best practices for coral restoration for the maintenance of ecosystem services.

The UN Decade on Ecosystem Restoration (2021-2030) and Ocean Science for Sustainable Development (2021-2030), provide opportunities to highlight the work already underway and set out a path of future actions.

**Challenges**

Coral reef restoration faces challenges associated with the relative novelty of the field and the sense of urgency for its applicability. Challenges include lack of integration with threat abatement, limited spatial scale for effective implementation, insufficient monitoring of effectiveness, and lack of long-term stakeholder engagement.

*Coral reef restoration can be mislabelled and mis-used as a stand-alone 'fix' for reef declines.*

It will not be successful if threats to the reef system are not mitigated prior or concurrently to the restoration effort. Importantly, the potential to restore should NEVER be used as an excuse to degrade reefs.

**Coral reef restoration and climate change**

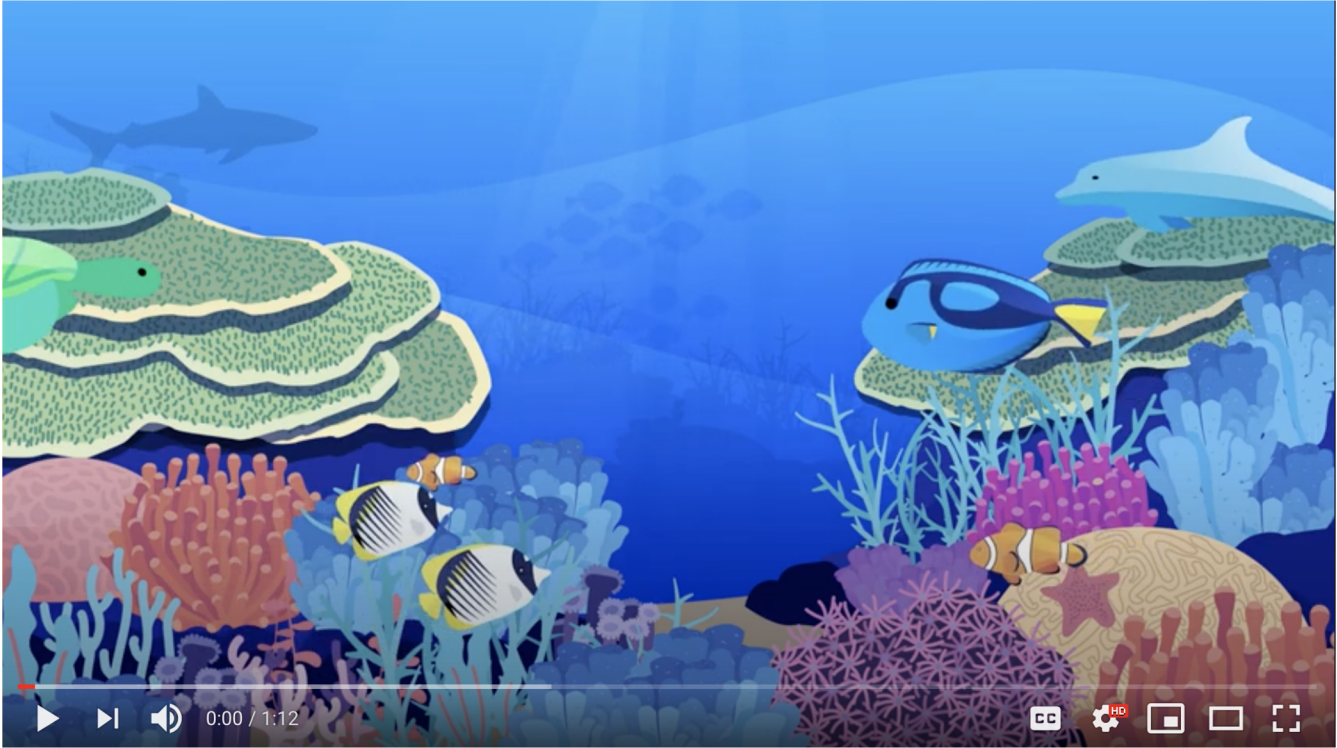
Coral reef restoration is not designed to reduce climate impacts, but rather, it is intended as a complementary tool to support natural recovery following disturbance in high-value areas. Given the many uncertainties associated with different climate scenarios, the key challenge is to design coral restoration efforts such that the realities of climate change are embedded in the choice of goals, objectives, and methods.

Climate change mitigation should not preclude investment in local management strategies designed to build the resilience and adaptation of the socio-ecological coral reef systems. *It is not an 'either or' situation*; multiple actions need to be implemented concurrently to provide coral reefs with the greatest hope for the future.

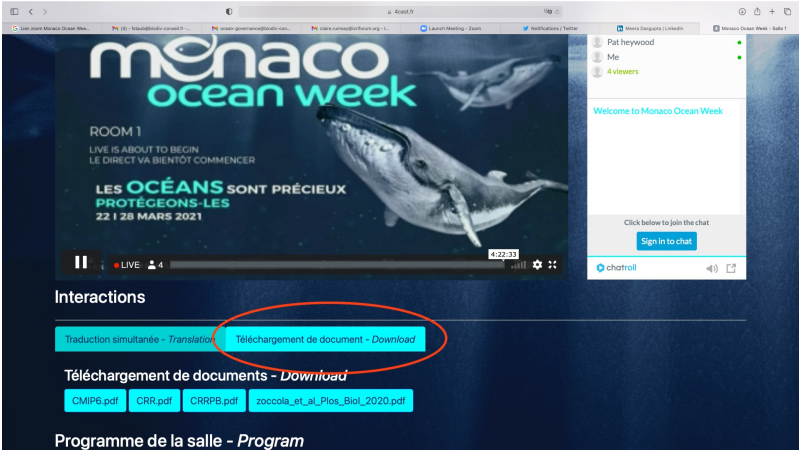




SUMMARY VIDEO



[www.icriforum.org/coralrestoration](http://www.icriforum.org/coralrestoration)





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# What is CORAL REEF RESTORATION?

**New Definition:** Focus away  
from historic baselines

**Goals:** Ecosystem-services across  
Ecological and social dimensions

**Methods:** Current and future





3

## TO RESTORE OR NOT TO RESTORE: *A call for realism*

“It is **not an ‘either or’ situation**, **multiple actions** need to be implemented **concurrently** to provide coral reefs with the greatest hope for the future.”

In the face of climate change coral restoration is:

1. **Not a quick-fix**
2. **NEVER an excuse for degradation**
3. **Not a solution on its own**
1. Promoting **genetic diversity + potential** for coral species to **adapt and change**
2. Helping **prevent species extinction**
3. Assisting **species migration**
4. Continuing the **provision of key ecosystem services**
5. Providing an **opportunity for action**



# 4

## RECOMMENDATIONS

### GENERAL RECOMMENDATIONS

- Whilst **not designed to mitigate climate change**, coral restoration **can be useful to support resilience-** especially at **local scale**
- Shouldn't be **mislabeled** as **a stand-alone, short-term fix** - RBM
- **Lots of challenges** linked to novelty of the field and sense of urgency
- MUST be **carefully planned** with **resilience and climate-smart design** in mind



4

# RECOMMENDATIONS

## SPECIFIC RECOMMENDATIONS

- Recommendations of goals
  - Based on expert surveys
- Recommendations of methods
  - Based on expert surveys

GOALS	SOCIO-ECONOMIC GOALS			
SUB GOALS	a. Recover and sustain coastal protection	b. Recover and sustain fisheries production	c. Sustain local tourism opportunities	d. Promote local coral reef stewardship
TIMEFRAME	Medium (3-5 years)	Long (> 5 years)	Short (< 3 years)	Short (<3 years)
	<ul style="list-style-type: none"> <li>Use nature-based solutions (green engineering, eco-design, biomimetics)</li> </ul>	<ul style="list-style-type: none"> <li>Site selection should consider fisheries protection and</li> </ul>	<ul style="list-style-type: none"> <li>Engage the tourism industry in the project as early as possible</li> </ul>	<ul style="list-style-type: none"> <li>Engage local stakeholders in the project as early as possible</li> </ul>
CLIMATE ADAPTATION AND SUPPORT GOALS				
a. Mitigate impacts and promote reef resilience through climate change				
Medium (3-5 years)				
<ul style="list-style-type: none"> <li>Site selection and project design based on climate smart models</li> <li>Species selection based on local knowledge of resilient coral assemblages and functional redundancy</li> <li>Integrate research on coral adaptation mechanisms</li> </ul>				
KEY CONSID	<ul style="list-style-type: none"> <li>Might be constrained by insurance and permitting rules</li> </ul>		the favoured solution <ul style="list-style-type: none"> <li>Aim for 'no-net loss' to offset ecological losses</li> </ul>	



# 5

## CONCLUSIONS

## RECOMMENDATIONS

1. **INTEGRATE** with threats and disturbance abatement strategies
2. **INCORPORATE** projections of climate change impacts and site vulnerabilities
3. **CONSIDER** prevalence of diseases, physical integrity of the reef, and connectivity of key species in the choice of sites and methods
4. **ENGAGE** stakeholders and maximise socio-economic benefits to local communities
5. **MONITOR** to allow for adaptive management and better communication of outcomes



## POLICY RECOMMENDATIONS

5

### CONCLUSIONS



**Policy, plans and funding specific to coral restoration are needed to assist implementation at local, regional and global scales**

**Coral reef restoration targets should be included in commitments as part of UN Decade on Ecosystem Restoration**



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# THANK YOU! NEXT STEPS

- Funding Landscape for coral reef restoration efforts (ICRI)
- Implementation guidelines (ICRI, UNEP, Global)

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# What is CORAL REEF RESTORATION?

Moving **beyond** “passive” and “active”

**Continuum** of actions and NOT stand-alone interventions

