

# REBUILDING CORAL REEFS

*A Decadal Grand Challenge*

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ICRS Science to Policy Paper 2021

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## Executive Summary

**THIS DOCUMENT IS THE WORK OF A TEAM** assembled by the *International Coral Reef Society (ICRS)*. The mission of ICRS is to promote the acquisition and dissemination of scientific knowledge to secure the future of coral reefs, including via relevant policy frameworks and decision-making processes. This document seeks to highlight the urgency of taking action to conserve and restore reefs through protection and management measures, to provide a summary of the most relevant and recent natural and social science that provides guidance on these tasks, and to highlight implications of these findings for the numerous discussions and negotiations taking place at the global level.

Coral reefs provide direct economic benefits and other contributions to human wellbeing for 100s of millions of people across more than 100 coral reef countries worldwide. Reefs are, however, highly threatened by human activities, with their very future hanging in the balance. This is due to ubiquitous threats associated with human activities, whose effects are felt both locally (e.g., overfishing and pollution) and globally (i.e., ocean warming and acidification due to rising greenhouse gas emissions).

The coming year and decade likely offer the last chance for international, regional, national, and local entities, working synergistically, to change the trajectory of coral reefs from one heading towards world-wide collapse to one heading towards slow but steady recovery.

Recovery depends on three interdependent pillars of action:

- Reduce global climate threats by lowering greenhouse gas emissions and increasing carbon sequestration, preferably through nature-based solutions.
- Improve local conditions by increasing protection and improving management for coral reef resilience.

- Invest in restoration science and active coral reef restoration to enhance recovery and adaptation rates, maintain or restore biodiversity, and explore new restoration technologies.

Meeting the challenge of ensuring a future for functional coral reefs is daunting but doable, as successful efforts in reef conservation, management, and restoration, as well as proven and developing climate mitigating technologies and approaches, can be found around the world. Moreover, promising new technologies and approaches are emerging, which we have summarised herein. However, efforts need to be dramatically scaled up.

Our Asks of the international policy community are threefold:

### **ASK 1: Establish Commitment—Ensure ambitions are enough to halt dangerous climate change and coral reef biodiversity loss, and that they are implemented.**

Both climate change and biodiversity loss are at an inflection point, and the time for action is now. Key decision points, including during 2021, at the *Conference of Parties to the Convention on Biological Diversity* (i.e., COP15) and the *Conference of Parties to the UN Framework Convention on Climate Change* (UNFCCC) (i.e., COP26) will provide vital opportunities for making commitments and developing mechanisms for their implementation. Ensuring that decisions at these COPs are ambitious enough to halt dangerous climate change and biodiversity loss, and that they are implemented, is critical to securing a positive outcome for coral reefs, as for almost all other ecosystems on the planet.

### **ASK 2: Promote Coherence—Build strong coordinated and synergistic actions across related policy fields at all levels of governance.**

Effective action at local and national levels is hindered by persistent geographic, sectoral, policy, and disciplinary fragmentation. Efforts across the Three Pillars of action—on climate, local conditions, and coral restoration—must be appropriately resourced and brought into coherence across sectors and at all scales. Climate change, biodiversity, and sustainable development are closely linked and highly relevant to coral reefs, and this needs to be reflected in streamlined, coherent policies and actions across these fields.

### **ASK 3: Drive Innovation—Develop new approaches where current solutions are insufficient to tackle the emergency facing coral reefs.**

Although many tools in the current tool box for reef conservation, management, and restoration remain essential (fisheries management, water quality control, capacity building, long-term monitoring, assessment metrics, etc.), a future with coral reefs will also require new technologies to ensure that reef ecosystems will continue to support human health, nutrition, wellbeing, and employment. Innovation should build on efforts of existing organisations and programs, such as the *International Coral Reef Initiative* (ICRI), the *Global Fund for Coral Reefs*, the *Reef Restoration and Adaptation Program*, and the *G20 Global Coral Reef R&D Accelerator Platform*, and capitalise on the *UN Decade of Ocean Science for Sustainable Development* and the *UN Decade of Ecosystem Restoration*.

For each of these Asks, options for actions that could be taken in the immediate future and looking ahead over the coming decade are presented.

Examples of healthy, well-managed, and recovering coral reefs exist, upon which additional successes can be built. New technologies are also being developed at a rapid pace that have the potential to accelerate progress. We cannot repair all past damage in the next ten years. However, by preventing irreversible damage we can lay the groundwork for future progress and begin to repair the degradation of these extremely valuable ecosystems.

Steps must be taken now to slow and reverse climate change, improve local reef conditions, jumpstart recovery through restoration, and accelerate innovation towards adaptation. These urgently needed actions must be designed so that they can respond to both changing conditions and changing scientific understanding and capabilities. They must also take advantage of and increase the synergies between steps taken at the international, national, and regional scales and implementation at the local level. Approaches that rely on co-management and local and Indigenous knowledge stand to be the most successful. There is no time to spare.

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