Strategic Plan

2020 - 2029



G20 CORAL RESEARCH & DEVELOPMENT ACCELERATOR PLATFORM

cordap

G20 Coral Research & Development Accelerator Platform

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Photo Chong Wan Yong



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1 Executive summary

In 2020, 17 G20 nations launched the Coral Research & Development Accelerator Platform (CORDAP) to accelerate global research and development for coral reef restoration and conservation.

Today, CORDAP is the only mission-driven, global R&D initiative focused on delivering scalable, high-impact innovations that enable coral survival, resilience, adaptation, and restoration.

By bringing together the best minds worldwide, we're advancing the next generation of science and technology, to secure a better future for tropical and deep-water corals and reefs in the face of climate change and other pressures.

Recent scientific assessments show that coral declines are accelerating, driven by unprecedented marine heatwaves of increasing frequency and intensity[1]. Deep-water corals, which account for most of the world's coral diversity, face the additional threats of acidification, fishing pressure and seabed disturbance. And while many tropical coral reefs remain resilient and can recover if conditions permit, the window for recovery is rapidly closing.

Traditional management and small-scale interventions are no longer sufficient. A step-change in innovation and deployment capability is essential. CORDAP funds transformative, scalable innovations that bridge the critical gap between research and real-world deployment of coral restoration and adaptation solutions.

To strengthen global coherence, we support and complement existing national, regional, and international initiatives that are already working on coral and reef conservation. And to avoid duplication, we focus on unique R&D functions not served by existing organizations, so that every dollar invested moves the global coral community further, faster.

From targeted, high-impact innovation pipelines to systems-based R&D design, we seek out approaches that connect highly resourced institutions with low- and middle-income countries (LMIC), creating solutions that can be used by both parties. These collaborations offer LMICs access to the latest technology, while giving institutions direct access to lived experience and local knowledge of managing corals and reef systems. Additionally, LMICs may have already developed low-cost interventions that, in collaboration with well-resourced partners, could be scaled up locally or transferred to other regions.



Photo ROV SuBastian / Schmidt Ocean Institute



CORDAP IN BRIEF

We are

Research and development focused

CORDAP is the only international organization fully dedicated to funding global research and development for coral restoration and conservation.

Committed to scalability

We're uniting the world's best scientific minds to drive effective, scalable solutions that can be used by coral conservation practitioners. This includes innovations designed specifically for LMIC contexts and practitioner-led environments.

Supporting broad global impact

CORDAP-funded projects prioritize scalability, cost-effectiveness, and global transferability. A stronger emphasis will be placed on solutions that can be deployed in regions facing the greatest capacity and resource constraints.

Open to all

CORDAP is open source, allowing everyone to advance and use the platform's technologies. Regardless of their nationality or resources, anyone with workable ideas for solving this issue can participate. All funded work adheres to a "Coral Commons" licensing principle to ensure equitable access.

Transdisciplinary

The CORDAP platform is designed to foster new, holistic solutions by combining input from inside and outside of marine science, including mechanical engineering, 3D printing, biology, structural engineering and architecture.

Research-led

CORDAP is inspired by the scientific consensus that the window for saving corals and reefs is closing, and it is guided by its international Scientific Advisory Committee (SAC). CORDAP integrates innovation with systems thinking, ensuring that funded R&D contributes directly to deployable, high-impact outcomes.

Efficient

Every penny of international funding that CORDAP receives goes directly to its R&D. Administration expenses are covered by King Abdullah University of Science and Technology (KAUST) as an in-kind contribution from the Kingdom of Saudi Arabia.

Equitable and inclusive

The outcomes of CORDAP-funded projects are accessible to everyone, allowing coral and reef solutions and technologies to be deployed wherever they are needed, particularly in developing countries.

2 Our mission

Our mission is to deliver high-impact, scalable R&D solutions that strengthen coral resilience, adaptation, and restoration, and that are deployable under real-world environmental, logistical, and socio-economic conditions, particularly in regions where capacity and resources are most limited.

CORDAP is focused on:

a. Driving radical, transformative advances in coral protection, adaptation, and restoration technologies.

b. Developing end-to-end R&D pathways that move ideas from concept towards deployment readiness, supported by systems-thinking approaches.

c. Fostering equitable scientific participation and building long-term regional capacity to use, adapt, and deploy new tools and methods.

d. Sharing R&D capabilities between highly resourced institutions and low- and middle-income countries (LMICs), helping build deployment capacity in regions that are home to a large portion of the world's corals.

e. Providing global, open-access innovations that complement the mandates of existing coral organizations.

Through these commitments, CORDAP aims to close the global gap between what is currently possible and what is urgently needed to protect and rebuild coral ecosystems suffering from growing climate and human impacts.





Photos Misha Vallejo Prut / Schmidt Ocean Institute



3 Our values

All processes are transparent, collegial, ethical, and fair.

CORDAP is committed to open and accountable governance, transparent decision-making, and clear communication with partners, stakeholders, and beneficiaries.

We recognize the importance of corals

to the lives of stakeholders and rights-holders, especially indigenous and other local communities, in regions where conservation and restoration interventions may be applied. We value co-design, respect traditional knowledge, and promote meaningful engagement that centers equity, cultural context, and social legitimacy.

We collaborate and share knowledge

to accelerate innovation and shift scientific and technological boundaries. CORDAP prioritizes open science, open data, and open-access technologies that strengthen global capacity and avoid duplication of work across organizations.

We support the development of novel technologies, methods, and processes

that can be adapted for deployment across different coral ecosystems (e.g. tropical and deep-water), or to meet the range of socioeconomic contexts where they may be applied. Solutions must be flexible, scalable, and capable of being translated to low- and middle-income settings.

We are building a gender-balanced, interdisciplinary, global community of scientists committed to our mission.

We are dedicated to improving global equity in coral R&D by fostering opportunities for practitioners, early-career researchers, and institutions from underrepresented regions.

We are committed to working on design and development

alongside the custodians of corals and reefs, and the practitioners who will put new solutions into practice. Delivering impact requires strong practitioner partnerships, practical implementation pathways and early consideration of local capacity and socio-economic factors.

We value all forms of research,

from basic to applied, and all disciplines, from natural and social sciences to engineering. We value systems-thinking approaches that consider the full pathway from idea to implementation, ensuring that innovations can function effectively in real-world environmental, logistical, and cultural contexts.

We encourage approaches that aim to make big advances, rather than refining current capabilities.

This may include high-risk, high-reward investments, provided appropriate social and ecological safeguards are in place. CORDAP will prioritize transformative innovations capable of delivering step-changes in cost-efficiency, scalability, and ecological impact.

We ensure the knowledge and technologies supported by CORDAP are freely available.

The CORDAP “Coral Commons” makes sure that intellectual property generated through our investments is accessible, affordable, and usable by restoration practitioners worldwide.

4 Strategic context

4.1 The current and forecasted state of corals and reefs

CURRENT GLOBAL STATE OF CORALS AND REEFS:

Tropical coral reefs occur in more than 100 countries and contribute an estimated USD2.7 trillion per year in goods and services[2]. These reefs underpin the safety, coastal protection, well-being, and food and economic security of hundreds of millions of people.

Corals and reefs are also extremely vulnerable to anthropogenic pressures, particularly those driven by climate change. Stressors include increased sea surface temperatures that trigger coral bleaching and mass mortality, ocean acidification, sea level rise, increased wave energy and storms, and changing patterns of currents and precipitation[3]. These impacts often interact with and intensify local and regional problems, such as poor water quality, disease, predation, invasive species, overfishing, and destructive fishing practices, resulting in widespread coral ecosystem losses.

Since 2020, global heat stress has accelerated at unprecedented levels. Marine heatwaves recorded in 2023 and 2024 produced the largest and most geographically extensive bleaching events ever documented. This has reinforced projections that, under current emissions trajectories, severe annual bleaching will occur across most tropical reefs within the next two decades.



Photo Noemi Merz / Ocean Image Bank





Photo ROV SuBastian / Schmidt Ocean Institute

In deeper, darker and cooler waters, corals enter the mesophotic zone, where many species combine photosynthesis with zooplankton for nutrition. Below the lower limits of sufficient light, often deeper than 30m, coral communities shift to deep-water species, which generally lack photosynthetic zooxanthellae and rely on plankton and suspended organic matter for nutrition.

Deep-water coral habitats occur on continental platforms, shelf breaks, slopes, seamounts, and ridge systems as deep as 6,000 m all over the world. Although these corals represent more than 65% of global coral diversity, they remain poorly mapped, poorly monitored, and under-represented in global conservation frameworks. Recent studies[4,5] indicate that many deep-water coral habitats are already experiencing measurable impacts from warming, affecting coral calcification and growth, and from industrial activities such as bottom trawling and seabed mining. However, due to the difficulty in observing these ecosystems, both our understanding of the full extent of global losses and our projections of their future trajectories are currently incomplete[6].

To date, large-scale coral bleaching caused by global warming has posed the greatest threat to tropical reefs, including the recent global event that began in 2023 and continued through to 2025[7]. Multiple regional assessments have reported record-breaking bleaching-linked declines, with some regions experiencing severe heat stress events back-to-back[8]. Local stressors, such as abundances of macroalgae and sea urchins, can then exacerbate declines, magnifying coral losses in the years following bleaching[9]. As a result, many species of coral and reefs are now highly threatened[10,11].

THE PROJECTED FUTURE FOR CORALS:

Projections of increased sea surface temperatures (SST) suggest that coral reefs will continue to decline in the next few decades.

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report indicates that by 2050, the world likely will have reached or exceeded 1.5 °C of warming since the pre-industrial era[12]. Research suggests we have already reached the global tipping point for corals - the critical temperature threshold which would trigger widespread dieback of this fragile ecosystem[13]. Recent analyses show that even under low-emission scenarios, more than 70% of tropical reefs are projected to experience extreme heat stress annually by 2040, and under high-emission scenarios, up to 99% of tropical reefs are expected to lose the ecological functions that sustain them.

Not only is ocean warming occurring faster than it has since the last ice age, but also the current rate of ocean acidification is at its highest level in the last 26,000 years . The amount of ocean warming observed since 1971 will likely double by the end of the century under a low-warming scenario (SSP1-2.6 - SSP referring to the IPCC's Shared Socioeconomic Pathway emissions scenario[14]) and will increase four to eight times under a high-warming scenario (SSP5-8.5[15]).

Only with massive and immediate cuts in greenhouse gas emissions, consistent with the SSP1-1.9 scenario[14], can we avoid the projected 1.5 °C global mean warming. Other scenarios that exclude immediate and additional efforts to constrain emissions, project that the mean global temperature will rise by 1.4 °C to 4.4 °C by the late 21st century[15].

Depending on the emissions scenario, sea levels are projected to rise between 0.28-1.02 m, which will exacerbate coastal flooding and erosion[16]. Vertical reef accretion rates (or how high reefs can grow) will lag in relation to the higher rates of sea level rise predicted by the end of the century[17,18,19] increasing the likelihood of reefs flooding and reducing their capacity for coastal protection.

A doubling of atmospheric carbon dioxide (SSP2-4.5[20]) is projected to further decrease ocean pH by 0.1 units, equivalent to a 26% change in acidity. The depths below which aragonite and calcite, types of calcium carbonate which form coral skeletons, are more likely to dissolve are already rising rapidly, increasing by around 1-5m per year, threatening both cold- and warm-water corals[21].

Climate change alone presents a global existential threat, and it's being exacerbated by inadequately managed local anthropogenic pressures. Globally, virtually every reef region is affected by human activity, limiting its ability to resist or recover from the impacts of climate change.



Photo Guilherme Longo

Scientists predict that disturbances including heatwaves and cyclones could change the make-up of the Great Barrier Reef - hard corals will potentially decline as algae levels increase in some areas, while soft coral could become more common than both hard corals and algae in others[22].

In the Western Indian Ocean, there is a significant risk that coral reef ecosystems will collapse over the next 50 years, largely due to climate change and overfishing[23]. Even with the best fisheries management in place, a range of warming scenarios predict that these reefs could lose between 20-80% of their coral cover by 2050, compared to 2020 levels[24].



Coral reefs in the Galápagos and in the Comoros are expected to continue experiencing local and archipelago-wide mortality and degradation, caused by a range of anthropogenic disturbances[25,26]. In the Caribbean, projected sea level rise and increased ocean acidification will make corals more vulnerable to severe storms. This will reduce the protection reefs provide to coastal infrastructure and affect local communities and economies, particularly in small island nations that rely heavily on tourism and fishing[27].

The Coral Triangle, which spans Indonesia, Malaysia, the Philippines, Papua New Guinea, Timor-Leste, and Solomon Islands, contains more than 40% of the world's tropical reefs. These reefs face intense pressures from a regional population of 225 million people, 95% of whom live along the 131,254-km coastline and depend on the ecological services they provide.

Like tropical corals, deep-water corals are threatened by human activities that disturb the ocean floor, such as fishing, mining and gas and oil exploitation. These stressors are compounded by the impacts of climate change, including rising temperatures and ocean acidification[28].

By the year 2100, projections indicate that about 70% of current deep-water coral habitats will become undersaturated with aragonite, likely altering their global distribution and abundance[29]. Using high emissions scenarios, models predict suitable habitat for deep-water corals decreasing by 28-100%. Coral declines of at least 79% are predicted, with some key species in the North Atlantic Ocean seeing declines of 99% by the end of the century, all due to ocean acidification and reduced food availability[30].

Traits such as long lifespans, slow growth rates, delayed sexual maturity, and limited recruitment success make deep-water corals particularly vulnerable, and make restoration efforts expensive and complicated. The loss of any deep-water coral is particularly concerning, because these ecosystems are expected to have recovery time scales in the order of decades to centuries. The slow rate of natural recolonization means direct human intervention will be needed to restore at least part of this fauna[31].

4.2. The need for urgent action

Even under optimistic emissions scenarios, global temperatures will continue to rise for decades, and most reefs will be exposed to increasingly frequent and severe heat stress. The window for effective intervention is narrowing rapidly: several regions already experience annual heat stress levels incompatible with natural recovery.

If corals cannot adapt naturally or through human-supported interventions, bleaching will become too frequent for many species to survive. However, evidence from thermally tolerant coral populations and novel adaptive traits indicates that targeted interventions, selective propagation, and assisted evolution may meaningfully increase survival under moderate warming scenarios.

Deep-water corals face a parallel crisis. Rising temperatures, declining carbonate saturation, and expansion of industrial seabed activity increase the probability of widespread ecosystem collapse. And because deep-water corals recover extremely slowly, delaying action severely increases long-term restoration costs and risks.

The global mass bleaching events over the last few years have highlighted the urgent need for action. And even if greenhouse gas emissions are drastically and immediately reduced, global ocean temperatures could still take decades to stabilize.

Yet, despite the threats they are facing, we've still seen increases in global coral cover between 2002 and 2009 and again in 2019. This suggests that, with the right conditions in place, many of the world's tropical coral reefs remain resilient enough to recover[32].



Photo FUNDEMAR



4.3 What we have and what we need

The window to secure a future for corals and reefs is narrow and rapidly closing. What we do in the coming decade will decide the future of corals and coral reefs.

Advances in resistance, resilience, and restoration capacity achieved within this timeframe will determine whether coral ecosystems persist, transform, or collapse. CORDAP's mission is therefore urgent and time-critical: to develop, test, and deliver R&D-enabled solutions that can reverse declining trends, enhance adaptation potential, and support global restoration at unprecedented scales.

Alongside global efforts to mitigate climate change, effective local management offers a real chance to help corals and reefs survive the Anthropocene[33,34,35]. Established conservation practices, such as marine protected areas and managed land-based pollution, are vital. But we also need bolder, more active management practices—predator control, coral reef restoration, and coral adaptation—to protect coral and coral reef ecosystems, enhance their resilience, and rebuild them.

Globally, we need to make a switch from passive management to more active ecosystem interventions. Taking widespread, direct action now will help corals cope with the impacts of climate change and other threats, so that fewer reefs are lost in the coming decades.

This represents a radical shift in our approach to coral conservation and restoration[36], applying techniques that include propagating sexual recruits and coral fragments, assisted migration, and selective breeding[37,38,39,40]. However, despite showing promise, to date these approaches have generally yielded limited success, due to the challenges and cost of scaling them up.

We need a more reliable assessment of the status and current extent of corals and reefs. This has been greatly improved for tropical reefs by the release of the Allen Coral Atlas[41] and the GCRMN's Status of Coral Reefs of the World reports[42]. But a lack of knowledge remains a hurdle for managing deep-water coral habitats, with many having been damaged or lost before they could even be documented. We also lack policy instruments and resources that could help remove pressures and improve management of tropical and deep-water coral.

Restoration efforts for tropical corals are still in their infancy. Conducted on a small scale, they are expensive and inefficient compared to our restoration capabilities in other critical marine ecosystems including salt marshes and mangroves[43]. Our capabilities are even weaker for deep-water corals, where restoration has scarcely been attempted.

The largest coral restoration to date is 8.4 ha, in the Caribbean[44]. Taken as a whole, the maximum size of completed restoration projects for tropical and deep-water corals are ten to 100-fold smaller than the largest successful seagrass and mangrove restoration projects[45] — more evidence of the wide gap in our capability. While there is limited evidence of long-term, ecologically relevant success in coral restoration, ongoing investments in research and development are likely to improve the scale and cost-efficiency of current methods[46].



Photo Erik Lukas / Ocean Image Bank



EXPERTS OUTLINE THE NEED FOR URGENT ACTION:

The International Coral Reef Society (ICRS), an advisory member of CORDAP´s Initiative Governance Committee (IGC), recently sponsored a report[47] identifying three critical pillars for improving coral restoration:

a. Reduce climate change threats

b. Improve local conditions to build resilience

c. Invest in active restoration to enhance recovery

The International Coral Reef Initiative (ICRI), a partnership of organizations and countries that host over 75% of the world's coral reefs, has released its own report[48] on the need to scale up restoration efforts, revealing that:

1. 88% of ICRI members are interested in the development of new international commitments and policies specifically dedicated to coral reef restoration;

2. 79% of ICRI members surveyed want more research to help them understand what to do, and 71% say they need a plan of action;

3. 61% said they need more dedicated funding and training and 46% said they need more international collaboration;

4. ICRI nations estimate that they will need to increase coral restoration efforts by more than 200-fold to meet current goals, which are extremely small compared to the total reef area within their national boundaries.

The Coral Restoration Consortium (CRC) outlined their six priority actions to increase efficiency in coral and reef management, including the need to scale deployment and increase cost-effectiveness[49].

CORDAP was established to address the increasingly bleak future faced by corals and reefs. Securing a future for corals and coral reefs requires an intensive, coordinated effort. That's why we are mobilizing scientists, technologists, innovators, policymakers, community leaders and philanthropists and harnessing the productive capacity of the private sector.

Our focus is to develop and deploy the right science and management approaches at scale, so we can not only avoid future losses, but also achieve at least a partial recovery of the world's tropical reefs and deep-water corals[50,51].

Active intervention is now unavoidable, and the primary limitation is no longer the absence of scientific knowledge alone, but the lack of scalable, cost-effective, and widely deployable solutions. Bridging the gap between innovation and implementation is the central challenge that CORDAP seeks to address.

5 The journey so far

5.1 The first 4 years

CORDAP has been delivering high impact research and capacity building for four years (Figure 1).

Growth and progress have been rapid, with the program expanding its reach to over 100 countries and over 500 institutions. We've focused on funding core research and development (R&D) through our Coral Accelerator Program (CAP), and on delivering R&D roadmaps to address critical research gaps.

During 2026, CORDAP is assessing the potential impact of our investments to date, to help guide the future direction of the program, identifying where more R&D is required and when to support moving an idea from research to adoption at scale?



North America

Bermuda
Canada
Mexico
USA

Central America

Anguilla
Antigua and Barbuda
Belize
Aruba
Bonaire
Cayman Islands
Costa Rica
Cuba
Curaçao
Dominica
Dominican Republic
El Salvador
Guatemala
Honduras
Jamaica
Nicaragua
Panama
Puerto Rico
Saint Lucia
Saint Vincent and the Grenadines
Turks and Caicos
The Bahamas
The Netherlands Antilles
US Virgin Islands

South America

Argentina
Brazil
Chile
Colombia
Ecuador
Peru
Uruguay
Venezuela

63 projects funded

7000+ researcher and research stakeholders supported

11000+ researchers and research stakeholders engaged

7 technology roadmaps

USD45 m committed towards coral research and restoration

>USD10 m leveraged since 2025

CORDAP through time*

2022
- **35** countries
- **57** institutions

2023
- **14** projects
- **4807** researchers
- **3** workshops
- **1** roadmap
- **65** countries
- **379** institutions

2024
- **22** projects
- **5905** researchers
- **6** workshops
- **4** roadmaps
- **88** countries
- **477** institutions

* Cumulative figures



Figure 1.
CORDAP at a glance.

5.2
The Evolution of CORDAP's Programs & Initiatives

Since its inception, CORDAP has strategically expanded its portfolio from a single flagship funding program to a diverse suite of programs, designed to support high-impact research while increasing global participation.

In 2025, CORDAP applied a Theory of Change lens to its vision (See Section 11 for more detail), identifying the core pathways needed for its research to be adopted and translated into impact. This helped identify where we should invest to drive progress, where we should partner and add to existing activities, and where others are already delivering and our investment isn't required.

This process will continue over the next three-year period to ensure the program remains relevant and is addressing the most critical areas of need.

2025

- **43** projects
- **6239** researchers
- **7** workshops
- **6** roadmaps
- **115** countries
- **663** institutions

2026

- **63** projects
- **7280** researchers
- **7** workshops
- **7** roadmaps
- **125** countries
- **1001** institutions

6 CORDAP goals and scope

CORDAP draws together scientists, engineers, technologists, and practitioners to collaboratively identify, develop, and deliver innovative, practical, and sustainable solutions that will enhance coral survival, conservation, resilience, adaptation, restoration, and rehabilitation (Figure 2).

Solutions will continue to be shared with coral conservation initiatives, such as ICRI, to drive their wider use and translation into conservation and restoration actions across the world by national and international partners, including UNEP, GFCR, Reef Resilience Network, the Coral Triangle Initiative on Coral Reefs, and Fisheries and Food Security – CTI-CFF.

CORDAP's scope is intentionally focused on high-impact, scalable R&D that complements the mandates of existing coral organizations. By concentrating on transformative innovation, systems design, and global technology transfer, CORDAP fills the critical gap between scientific discovery and deployable solutions, particularly in low- and middle-income countries where intervention capacity and resources are most constrained.

Our main priorities are to:

a. Develop and enhance new and existing R&D solutions that support the protection, restoration, and adaptation of coral reefs and deep-water corals.

b. Move potential solutions from concept to proof of concept, and from pilot to deployment.

c. Partner with stakeholders to adapt and deploy existing R&D tools and approaches for local coral protection, restoration and adaptation.

d. Create new solutions that can be used across diverse socioeconomic contexts and stakeholders, supported by tools that help practitioners choose the most appropriate approach for their local conditions.



Photo Dani Escayola / Ocean Image Bank

To deliver these priorities, CORDAP will:

- Establish a coordinating mechanism that connects existing national, regional, and international R&D programs and international panels, capitalizes on the diverse expertise of G20 members, learns from their R&D approaches, identifies potential synergies and advances shared R&D priorities to enhance resilience and conservation of corals and reefs globally;
- Support a gender-diverse, internationally inclusive, transdisciplinary, global community to develop scalable end-to-end solutions that contribute to CORDAP objectives;
- Seek opportunities to engage and collaborate with the private sector on R&D for the conservation, resilience, and restoration of corals and reefs;
- Facilitate information sharing between a network of field, research, and testing facilities across participating institutions;
- Provide advanced R&D training and access to cutting-edge research facilities and infrastructure in a gender-balanced way, to scientists from developing and least developed countries;
- Develop and share scientific tools for assessing the social and ecological costs and benefits of scalable applications, based on proof-of-concept and pilot projects;
- Deliver novel science and technology approaches, tested at pilot scale, to address specific needs and gaps as articulated by relevant stakeholders. Findings will be proactively shared with ICRI and UNEP, and with implementing mechanisms and initiatives such as those funded by the GFCR;
- Build the enabling ecosystem that will help deliver impact.

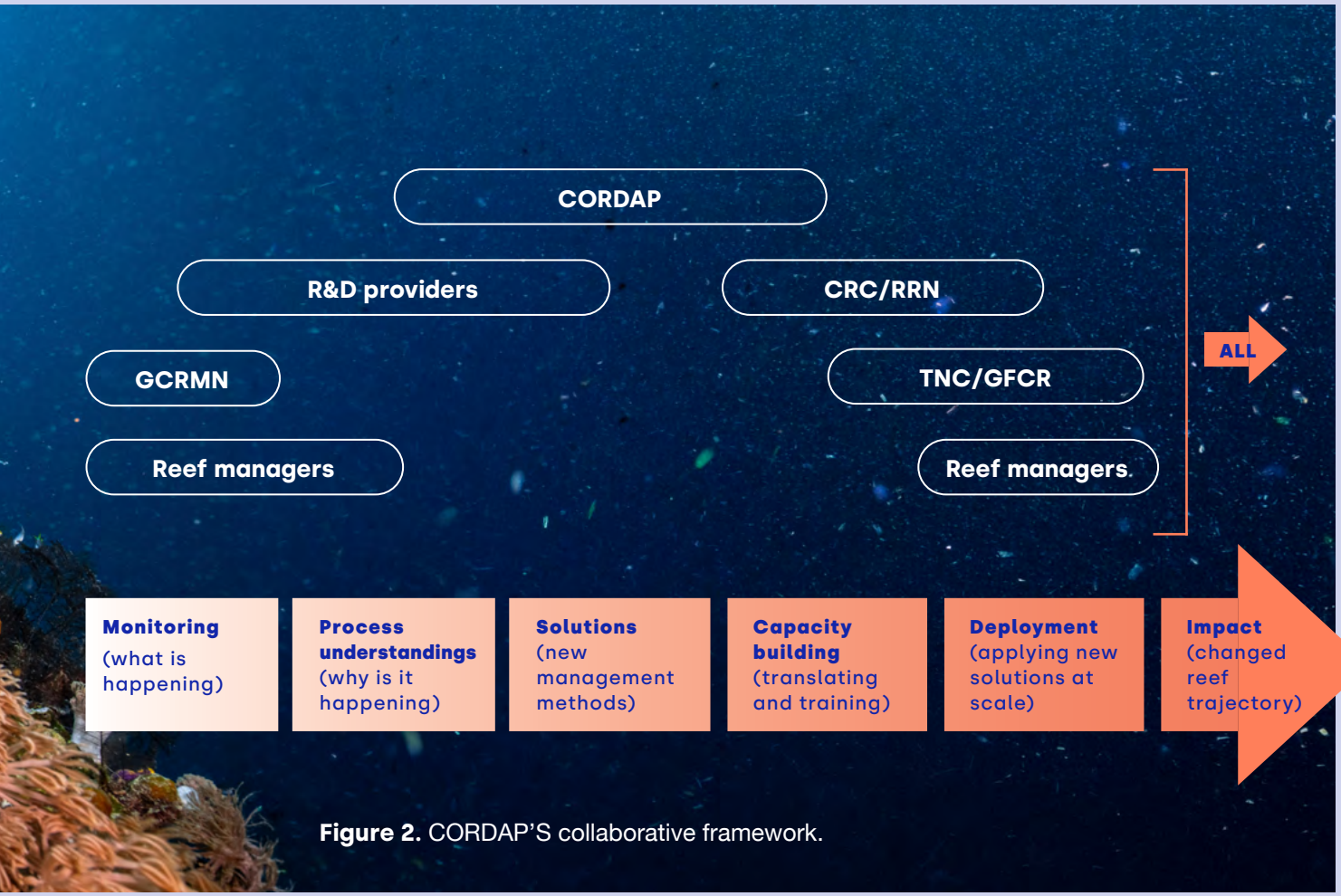


Figure 2. CORDAP'S collaborative framework.

7 Program delivery

7.1. Delivery mechanisms

During CORDAP's initial delivery phase, we have been actively evaluating how to realize our vision more effectively and how to maximize impact.

Originally conceived as an R&D accelerator, we have broadened our focus to assess the wider ecosystem of necessary changes—and to determine where we can contribute best within that landscape.

CORDAP has developed six strategic pillars:

1. Advance R&D and drive innovation

Enhance existing solutions and pioneer new research and development efforts to protect, restore, and conserve coral reefs including deep-water ecosystems.

2. Support the full innovation lifecycle

Accelerate promising ideas from concept to proof-of-concept, and empower entrepreneurs to scale solutions from pilot studies to deployment.

3. Enable locally-led action

Equip and empower local communities and stakeholders to apply tools and approaches tailored to their specific coral reef conditions.

4. Foster global capacity and knowledge exchange

Strengthen capacity, collaboration, and knowledge-sharing across all socioeconomic contexts with a strong focus on practitioners in low- and middle-income countries.

5. Build a global coalition for coral solutions

Unite public and private actors through strategic partnerships to advance coral R&D, restoration, conservation, capacity, and policy reform.

6. Secure and allocate resources effectively

Mobilize and deploy financial resources to ensure sustained impact and delivery of CORDAP's mission.

Over the next three years, our initiative will continue to evolve based upon these pillars, which build upon CORDAP's unique global position, facilitating networks, fostering collaboration, and strategically filling gaps.

Meeting the scale of global need demands that every dollar invested delivers maximum impact, and this is where CORDAP can play a catalytic role.



Photo Shaun Wolfe / Ocean Image Bank

Our current suite of delivery mechanisms includes:



Coral Accelerator Program (CAP)

As our core R&D accelerator program, CAP provides substantial grants of up to USD1.5 million for international collaborative teams. It funds the entire R&D pipeline, from novel ideas to proof-of-concept, and includes a mandatory requirement for participation by low- and middle-income countries (LMICs), to foster global collaboration. CAP is a team-based, multidisciplinary program. Project types and priority areas have been refined over the years, in line with the latest scientific studies and recommendations from our scientific and advisory committee members.



Entrepreneurship Program

Accelerating the journey of high-value ideas from early-stage research and pilot deployment into full-scale, routine use, this program supports a range of entrepreneurial pathways. From mission-driven social enterprises to commercially focused ventures, it will ensure that innovations with public, environmental, or economic benefit can reach the communities and industries that need them.



Scoping Studies

Designed to inform research roadmaps, the outcomes of these studies directly inform the strategic focus of funding programs, ensuring resources are allocated to the highest-impact areas. The resulting roadmaps are published and made openly available, guiding global research efforts.



Grand Challenges

We are launching larger USD10 million-plus programs, focused on some of the most urgent and difficult areas. These initiatives will provide enhanced funding to large consortia of scientists, practitioners, educators, and regulators seeking to develop truly scalable solutions. During the next three years CORDAP will launch several Grand Challenges including: the Global Coral Heat Tolerance Challenge, the Cold-Water Coral Grand Challenge, the Global Coral Biobank Network Grand Challenge and the Capacity Building Grand Challenge. In each instance CORDAP is securing additional funding partners to supplement our investment.



Coral Local Innovation Program (CLIP)

Responding to a need for greater inclusivity, CORDAP launched CLIP in 2025, to better support coral conservation and restoration research in LMICs. This small grants program provides up to USD100,000 per project, to be used specifically to empower researchers in LMICs, by making funding more accessible and addressing localized coral challenges. Unlike CAP, which follows a team-based approach involving organizations from multiple countries, CLIP can be accessed by individual applicants.

Further details of these programs can be found on the CORDAP website. Priority will be given to initiatives that demonstrate clear pathways to scalability and deployment, ensuring that resources are concentrated on solutions with the highest potential for global impact.

7.2
Research innovation and systems thinking

Creating impact requires using system-integrated approaches. For instance, interventions like coral re-seeding are not standalone technologies, they depend on an integrated system of methods, processes, infrastructure and local context.

Funding requests often involve new technologies with system-integrated approaches. To assess impact, we must see the broader context and identify which components already exist, which are in development and which require additional R&D.

Consequently, researchers applying for CORDAP funding will be asked to present their research into a "whole system/produced impact" framework, identifying all the elements necessary for the impact to occur, i.e., materials, production, transport, deployment, infrastructure, human resources, and indicating which ones of these steps their research addresses.

We do this to:

- Encourage systems engineering thinking and early refinement of proposals;
- Ensure future scaling is considered from the outset;
- Help identify partnerships inside and outside CORDAP;
- Support clear, informed investment decisions;
- Help drive future priorities in CORDAP programs.

As part of the application process, we provide guidance on impact-focused approaches and can help further clarify it upon the applicant's request.

CORDAP will use the outcomes of this research to assess the potential impact of further research investments, to define collaborative actions with practitioners and managers, and to strengthen the portfolio of solutions on offer for coral conservation and restoration.

This systems-based approach explicitly requires applicants to identify and solve deployment constraints, including cost, logistics, regulatory barriers, and local capacity, ensuring that proposed innovations are viable beyond the research phase.



Photo Chiahsin Lin



7.3 Intellectual property

CORDAP´s mission is to generate innovative, practical, and sustainable solutions that will support conservation and restoration efforts across the world.

We will therefore manage intellectual property (IP) so that it can be applied by coral restoration efforts worldwide, and so that resulting technologies will be accessible and affordable to those who need them.

- CORDAP does not seek to own any of the IP resulting from its funded activities. Ownership will be determined by the organizations collaborating on the research, as agreed between them;
- Owners of IP resulting from CORDAP-funded activities must provide a free license for all commercial and non-commercial coral restoration use, including free license to any background IP the project relies on;
- CORDAP-funded developments and technologies should be made available and accessible at an affordable price to all coral restoration projects;
- Publications and underlying data generated by CORDAP-funded activities will be made openly accessible, allowing others to build upon and re-use this knowledge and information.

Building on current IP with similar availability criteria for coral restoration, CORDAP will seek to establish an IP “Coral Commons” where all freely available IP generated globally for coral restoration can be accessed, examined, and licensed.

7.4 Transparency and investment decision allocation processes

CORDAP is committed to transparent decision processes and competitive allocation of funding.

Decisions on funding approval and priorities between and within programs (CAP, CLIP, Grand Challenges, and Scoping Studies) are made by CORDAP's Initiative Governing Committee (IGC) based on recommendations from our Science Advisory Committee (SAC). Summaries of current investment priorities are available on the CORDAP website.

CORDAP's programs each have specific processes designed to match their scope. However, common across all are the following core principles:

- Transparency in decision making;
- Competitive allocation processes;
- Independence in review processes and funding allocation;
- Funds distributed to those most capable of delivering, while supporting capability development in LMCI countries.

Links to program summaries, governance arrangements, and investment priorities are available at CORDAP's webpage.



Photo Marie Roman / Australian Institute of Marine Science



7.5 Strategic partnerships and collaborations

Since its establishment, CORDAP has built a broad international network, spanning governments, scientific institutions, conservation organizations, funders and other actors across the coral reef community. Our priority to 2029 will be to build on this foundation, expanding strategic partnerships aligned with CORDAP's priorities and delivery needs.

CORDAP's governance and advisory structures provide an important foundation for this approach. Through the Initiative Governing Committee (IGC) and its Advisory Members, CORDAP connects governments and leading international organizations, while the Science Advisory Committee (SAC) brings together expertise from across the global research community to help shape scientific priorities. Together, these structures position CORDAP to connect science, policy and implementation across regions and institutions.

Strategic partnerships will increasingly be developed around shared programme priorities, bringing together complementary scientific expertise, research infrastructure, technology, implementation capability and/ or specialist networks. Where there is strong alignment, CORDAP will work with partners to co-design and co-programme initiatives, and to align funding and other resources around their delivery.

We will also aim to strengthen collaboration with regional and national institutions to ensure that programs are informed by local priorities and capabilities, while creating stronger pathways for knowledge exchange, capacity development and adoption.

This partnership model will become increasingly important as CORDAP develops larger, more integrated programs, including the Grand Challenges, where successful delivery will depend on combining the capabilities, resources and reach of multiple partners.

By 2029, CORDAP aims to have developed a more deliberate and strategically aligned portfolio of partnerships that strengthens delivery of its priorities and supports the achievement of its mission.

7.6. Resource mobilization

CORDAP entered the 2026–2029 strategy period with a broader and more diversified approach to resource mobilization.

Since the CORDAP Foundation became operational in 2024, the initial focus has been on establishing the necessary infrastructure and capacity, increasing the visibility of CORDAP and its programs, and developing relationships across government, philanthropic and private-sector communities. This provides the basis for the next phase of CORDAP's resource mobilization.

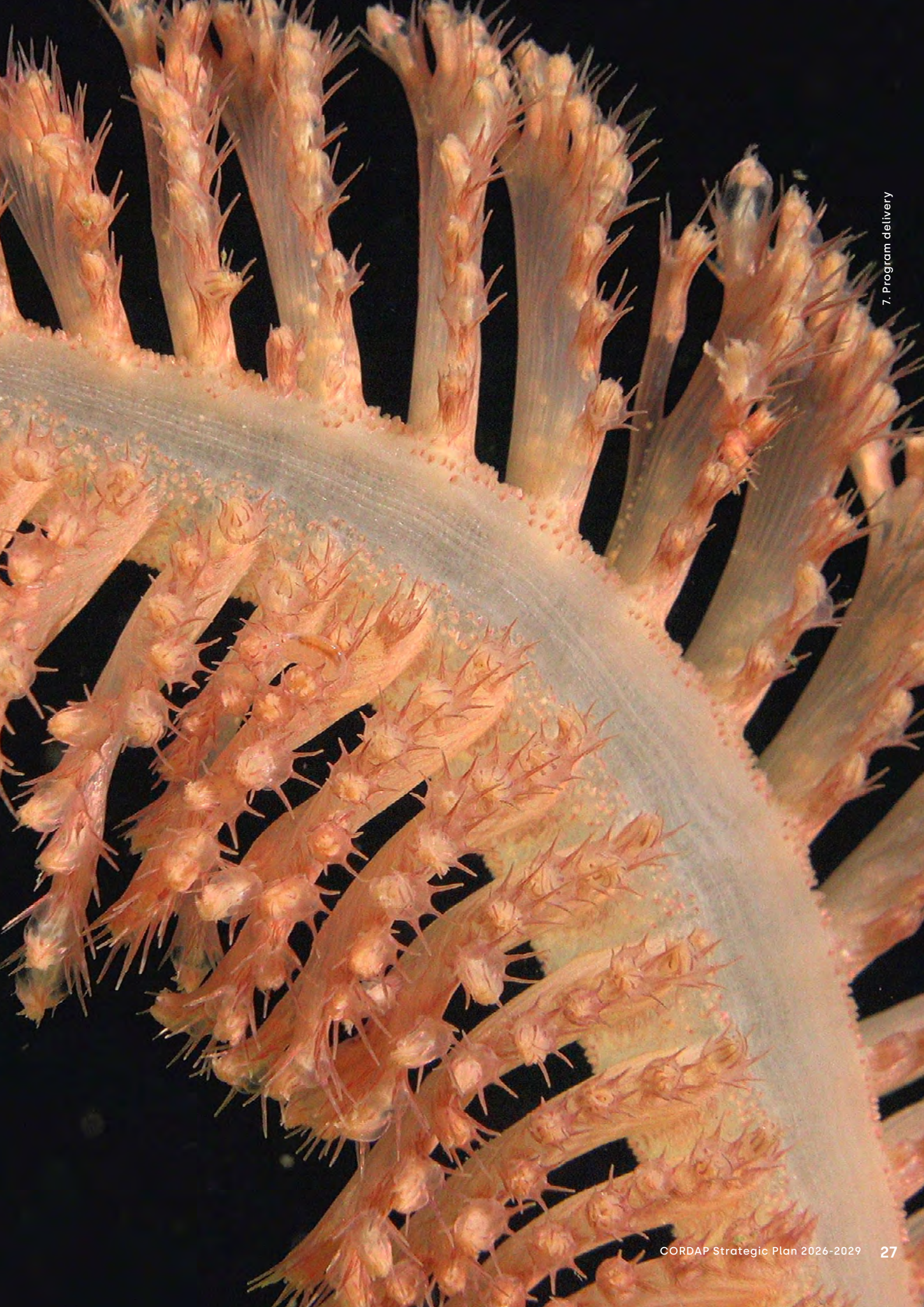
Different funding sources will play complementary roles. Government funding will remain important to CORDAP's international mandate and long-term resource base and will continue to be pursued through sustained engagement with G20 and non-G20 governments. In parallel, CORDAP will expand engagement with foundations, philanthropists and corporate partners, whose funding can provide greater flexibility and enable priority programs and opportunities to progress more quickly.

A key evolution will be the expansion of co-funding, particularly across CORDAP's Grand Challenges and other larger programs. Building on the partnership model described above, CORDAP will seek to align its own investment with funding from partners around shared program priorities, enabling programs to attract resources at greater scale.

CORDAP's resource mobilization model will therefore encompass both direct funding received by CORDAP and resources mobilized through agreed co-funding arrangements for joint programs. This approach will broaden the funding base, leverage CORDAP's own investment and support sustained delivery of its strategic priorities.



Photo ROV SuBastian / Schmidt Ocean Institute



8 Outputs and impacts: Who will use them and how?

As an R&D accelerator program, CORDAP will deliver technologies, methods, and processes that can be applied in coral conservation and restoration efforts across the world through existing national and international efforts.

We therefore require others to adopt the research generated through CORDAP. Making this happen is critical and a major focus for us. We are committed to the principles of co-design, and will include end-users, practitioners, philanthropists, entrepreneurs, and managers in efforts to develop scalable solutions for coral conservation and restoration. Additionally, as part of R&D investments, CORDAP-funded teams are also encouraged to work with local end users to move from R&D towards ongoing, practical applications.

In recognition that broad application of R&D and achievement of impact requires active management, several secondary mechanisms are also being used. Table 1 provides a summary of the mechanisms currently in place, and these will continue to evolve over time.



Photo Margaret Miller



Mechanism	Methods for delivery
Local adoption of research projects	Researchers work with local practitioners to support adoption of R&D outcomes
Peer-reviewed publications	Researchers publish CORDAP R&D findings for use by others (policy makers, researchers, practitioners)
Standard operating practices (SOP's) and other guides	Presenting R&D project outputs as SOP's for use by practitioners
Method and technology transfer projects	The new CORDAP Entrepreneurship program is designed to assist in moving new methods and technologies from research to at scale application
Training and capacity building	The CORDAP CAP and CLIP programs both allow submission of training and capacity building programs; The Capacity Building Grand Challenge will deliver training in the new methods and technologies being developed by CORDAP
Policy advice	CAP R&D projects fill critical knowledge gaps needed for policy development; Investment in decision support tools for policy level decisions
Investment decision support	CORDAP scoping studies and resulting roadmaps provide recommendations to guide investment; Improved investment decision support tools

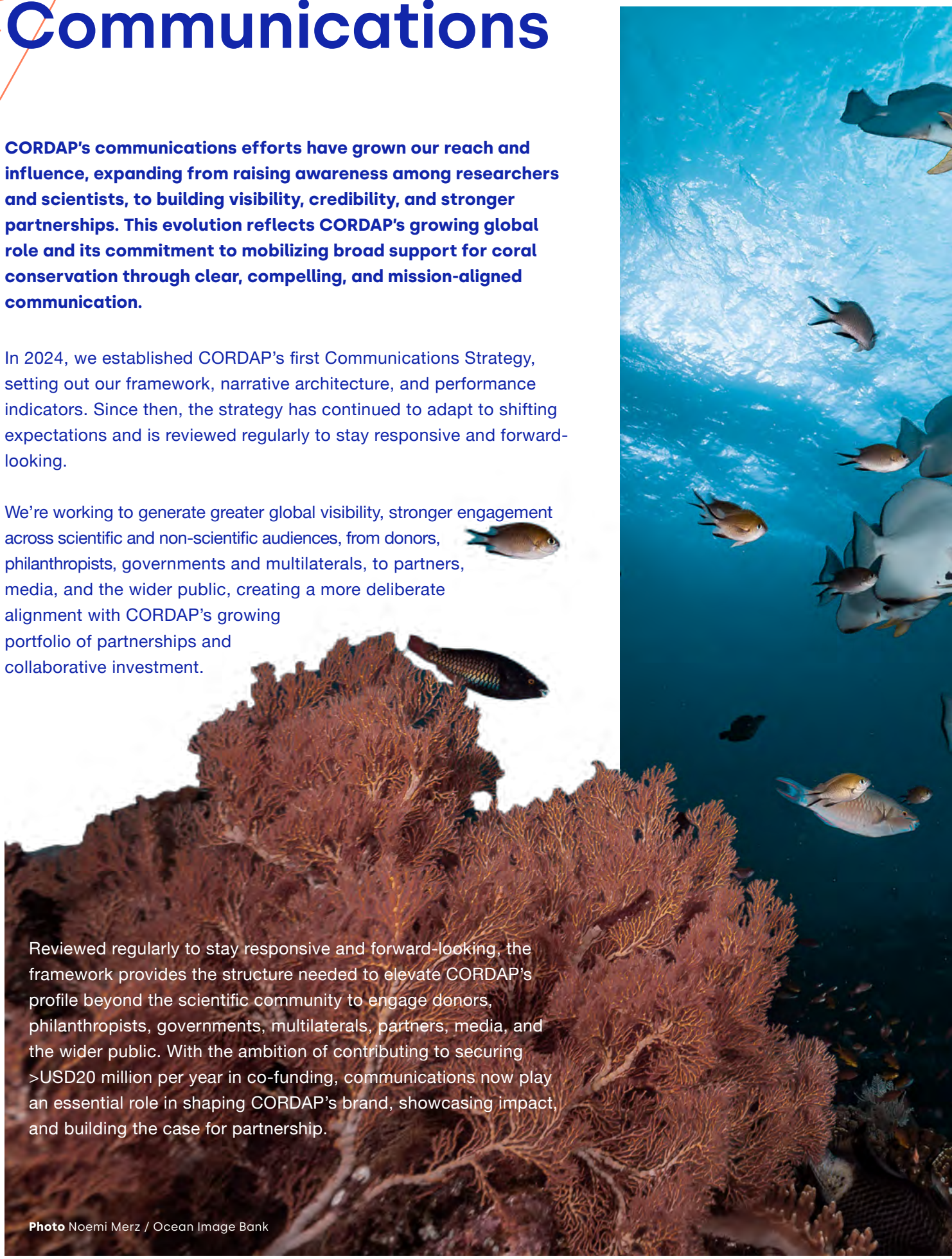
Table 1. Methods to deliver impact.

9 Communications

CORDAP's communications efforts have grown our reach and influence, expanding from raising awareness among researchers and scientists, to building visibility, credibility, and stronger partnerships. This evolution reflects CORDAP's growing global role and its commitment to mobilizing broad support for coral conservation through clear, compelling, and mission-aligned communication.

In 2024, we established CORDAP's first Communications Strategy, setting out our framework, narrative architecture, and performance indicators. Since then, the strategy has continued to adapt to shifting expectations and is reviewed regularly to stay responsive and forward-looking.

We're working to generate greater global visibility, stronger engagement across scientific and non-scientific audiences, from donors, philanthropists, governments and multilaterals, to partners, media, and the wider public, creating a more deliberate alignment with CORDAP's growing portfolio of partnerships and collaborative investment.



Reviewed regularly to stay responsive and forward-looking, the framework provides the structure needed to elevate CORDAP's profile beyond the scientific community to engage donors, philanthropists, governments, multilaterals, partners, media, and the wider public. With the ambition of contributing to securing >USD20 million per year in co-funding, communications now play an essential role in shaping CORDAP's brand, showcasing impact, and building the case for partnership.

Photo Noemi Merz / Ocean Image Bank



LOOKING AHEAD



to 2026 - 2029, CORDAP's communications will prioritize:

a. Targeted, strategic messaging that conveys the urgency of coral conservation and the value of CORDAP's mission;

b. High-impact storytelling that translates science and innovation into accessible narratives that inspire action and investment;

c. Proactive media engagement and thought leadership that establish CORDAP as the global authority on coral R&D and restoration at scale;

d. Integrated campaigns and partner diversification, ensuring coordinated and consistent messaging across all platforms.

Through these efforts, CORDAP will continue to build a strong, trusted global brand — one that accelerates advocacy, strengthens partnerships, mobilizes resources, and reinforces CORDAP's position at the heart of the global effort to secure a future for corals.

10 Monitoring and evaluation

CORDAP will continue to implement a lean yet robust Monitoring and Evaluation (M&E) framework, to ensure alignment, adaptive management, and measurable impact across all investments.

Our approach is guided by five principles:

1. Purpose-driven and impact-focused:

The M&E system rigorously measures progress toward CORDAP's mission of bridging global capability gaps in coral reef R&D. It moves beyond activity tracking to assess long-term impact, and whether the portfolio delivers discoveries, innovations, and tools for affordable, large-scale restoration. Key performance indicators will include adoption rates of supported innovations, cost reductions in restoration interventions, spatial scale of deployment, and evidence of long-term ecological outcomes.

2. A tiered and integrated approach:

We operate a three-tiered M&E system that integrates project-level data with program-level strategic analysis:

Project level monitoring is being integrated directly into the funding guidelines, with requirements tailored according to each grant and kept to the essential minimum. This ensures R&D efforts remain the primary focus, supported by annual technical reporting, grantee check-ins, and a final project summary.

Periodic impact reviews are used to assess the current impact of R&D investments, their potential for future impact, and what is required to achieve impact. This knowledge will be utilized to drive priorities in CORDAP's and other programs.

Program level monitoring, using a structured M&E cycle to aggregate project data against key strategic metrics, allows us to track the distribution of investments, the diversity of research areas and principal investigators, and the critical transition of research from discovery to scalable deployment.



Photo Luminocean



3.
Potential and realized impact

CORDAP is a critical component of the broader ecosystem required to generate meaningful impact. In the sections above we have outlined CORDAP's role and its relationships with others within the innovation and implementation landscape. Our activities can lead to two distinct forms of impact:

Realized impact — where CORDAP-supported research or innovation has been applied at scale, resulting in measurable social, cultural, ecological, or economic outcomes;

Potential impact — where CORDAP creates the conditions for impact, but the outcomes are only achieved when others take subsequent action. For example, when CORDAP-funded R&D is adopted and deployed at scale by restoration practitioners or industry partners.

Both realized and potential impact will be assessed when evaluating CORDAP investments, recognizing that different projects contribute to impact at different points along the pathway from research to large scale application.

4.
Fostering adaptive management and strategic learning:

By analyzing aggregated data, we identify and assess high-potential ideas. Insights are synthesized into clear reports, ensuring evidence-based resource allocation and strategic direction.

5.
Ensuring accountability and transparency:

Oversight rests with a SAC subcommittee, with execution by the Platform Central Node (PCN). This governance model ensures objective assessment and transparent reporting on CORDAP's relevance, effectiveness, and mission impact.

In summary, our M&E principles are designed not as a bureaucratic exercise, but as an essential, integrated function for maximizing the return on investment in coral conservation R&D and accelerating the development of scalable solutions for reefs worldwide.

11 Guiding the way forward:

CORDAP's strategy is grounded in a clear Theory of Change that links targeted R&D investments to measurable, large-scale impact on coral reef resilience, adaptation, and restoration.

PROBLEM STATEMENT

Despite significant advances in coral science and restoration techniques, current approaches remain insufficient to address the scale, speed, and complexity of coral reef decline.

Key barriers include:

- Limited scalability of existing restoration methods;
- Disconnect between research, innovation, and deployment;
- Insufficient integration of socio-economic and local context;
- Unequal access to technologies, particularly in LMICs;
- Weak pathways from innovation to adoption.

STRATEGIC ASSUMPTIONS

CORDAP's approach is based on the following core assumptions:

1. **Transformative innovation is required:** Incremental improvements will not be sufficient to match the pace of reef degradation;

2. **Scalability must be designed from the outset:** Technologies and approaches must be developed with cost, logistics, and deployment constraints in mind;

3. **Bridging R&D and implementation is a critical gap:** Impact depends not only on innovation, but on adoption by practitioners and institutions;

4. **Global equity is essential for global impact:** Solutions must be accessible, adaptable, and usable in LMIC contexts;

5. **Open access accelerates applicability:** Shared knowledge and technologies increase applicability and global scaling potential.

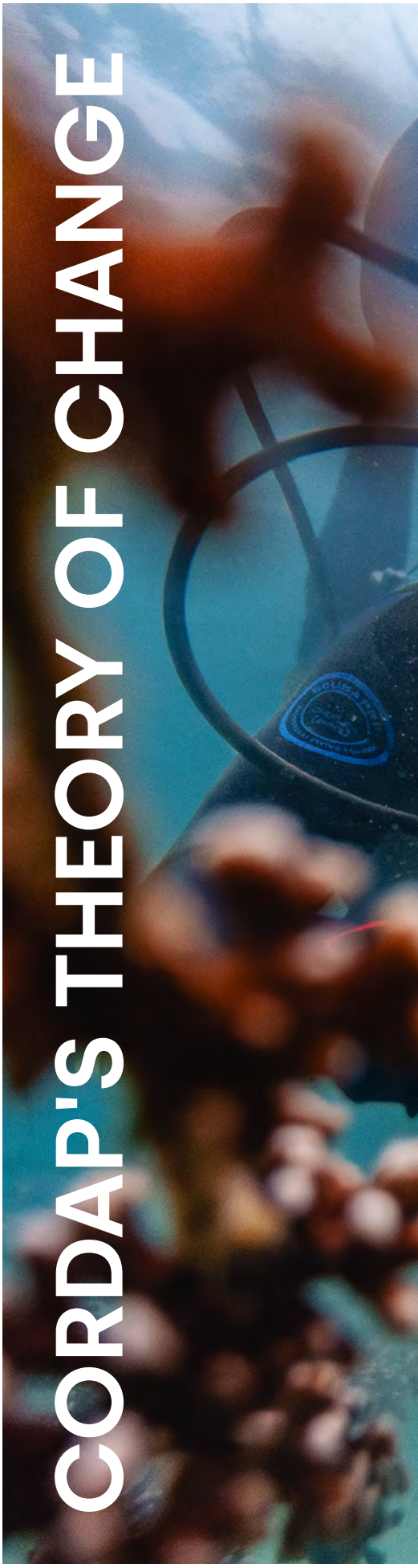




Photo Joshua Vela

STRUCTURED PATHWAY

CORDAP's interventions follow a structured pathway from inputs to long-term impact.

Inputs:

- Financial resources, global scientific expertise, partnerships, and institutional support.

Activities:

- Funding transdisciplinary R&D (CAP, CLIP, Grand Challenges);
- Developing research roadmaps and priority areas;
- Supporting capacity building and knowledge exchange;
- Facilitating partnerships across science, policy, and practice.

Outputs:

- New technologies, methods, and protocols;
- Validated proof-of-concept and pilot-scale solutions;
- Open-access data, tools, and intellectual property;
- Trained researchers and practitioners.

Outcomes:

- Increased adoption of CORDAP-supported innovations;
- Improved capacity for local deployment and adaptation;
- Strengthened collaboration between research and implementation actors;
- Reduced cost and increased efficiency of restoration interventions.

Impacts:

- Scalable restoration and adaptation solutions deployed across diverse reef systems;
- Enhanced resilience and recovery potential of coral ecosystems;
- Reduced rate of coral reef degradation;
- Long-term socio-ecological benefits for coastal communities.

DEFINITION OF SCALABILITY

For CORDAP, scalability refers to the ability of a solution to be:

1. **Technically replicable** across sites and reef types;
2. **Economically viable,** with decreasing cost per unit area restored;
3. **Operationally deployable** using available infrastructure and skills;
4. **Socially acceptable and adaptable** to local contexts;
5. **Transferable across regions,** particularly in LMIC settings.

RISKS AND MITIGATION

CORDAP recognizes several key risks and has identified how they can be mitigated:

- Limited adoption of tools and products ➔ mitigated through co-design and practitioner engagement;
- Technological solutions not fit for purpose ➔ mitigated through systems-based design and pilot testing;
- Disconnect across initiatives ➔ mitigated through strategic partnerships and alignment;
- Inequitable access to solutions ➔ mitigated through open-access principles and capacity building.

ADAPTIVE LEARNING

CORDAP's Monitoring and Evaluation framework supports continuous learning and adaptive management by:

- Tracking both potential and realized impact;
- Identifying high-impact pathways and bottlenecks;
- Informing future investment decisions and program design.



Photo Noemi Merz / Ocean Image Bank



12 References

1. IPCC (2022) Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Pörtner *et al*.). Cambridge University Press. doi.org/10.1017/9781009325844

   Souter, D. *et al*. (2021) Status of coral reefs of the world: 2020 report. Global Coral Reef Monitoring Network (GCRMN) and International Coral Reef Initiative (ICRI). doi.org/10.59387/WOTJ9184

   NOAA (2024) www.noaa.gov/news-release/noaa-confirms-4th-global-coral-bleaching-event. Accessed 2nd October 2026.

2. Souter, D. *et al*. (2021). Status of coral reefs of the world: 2020 report. Global Coral Reef Monitoring Network (GCRMN) and International Coral Reef Initiative (ICRI). doi.org/10.59387/WOTJ9184

3. Hoegh-Guldberg, O. (2011) The impact of climate change on coral reef ecosystems. Z. Dubinsky and N. Stambler (eds.), Coral Reefs: An Ecosystem in Transition, DOI 10.1007/978-94-007-0114-4_22, © Springer Science+Business Media B.V.

4. Büscher, J.V *et al*. (2022) Cold-water coral ecosystems under future ocean change: Live coral performance vs. framework dissolution and bioerosion. Limnology and Oceanography, 67(11), 2497–2515. doi.org/10.1002/lno.12217

5. Strong, J. A. *et al*. (2023) Recovery and restoration potential of cold-water corals: Experience from a deep-sea marine protected area. Restoration Ecology, 31(8), e13970. doi.org/10.1111/rec.13970

6. Liu *et al*. (2024) Conservation and Restoration of Cold-Water Corals: CORDAP R&D Technology Roadmap. Coral Research & Development Accelerator Platform (CORDAP), 59 pp.

7. Reimer JD, *et al*. (2024) The Fourth Global Coral Bleaching Event: Where do we go from here? Coral Reefs 43:1121-1125 10.1007/s00338-024-02504-wSouter, D. *et al*., 2021, Status of coral reefs of the world: 2020, Global Coral Reef Monitoring Network.

8. González-Rivero, M. *et al*. (2026) Status of Coral Reefs of the World: 2025. Global Coral Reef Monitoring Network (GCRMN), International Coral Reef Initiative (ICRI). doi.org/10.59387/LFPR6347

9. Donovan, M.K. *et al*. (2021) Local conditions magnify coral loss after marine heatwaves, Science, 372(6545), pp.977-980.

10. Gutierrez, L. *et al*. (2024) Half of Atlantic reef-building corals at elevated risk of extinction due to climate change and other threats. PloS One 19(11):e0309354 10.1371/journal.pone.0309354.

11. Obura, D. *et al*. (2021) Vulnerability to collapse of coral reef ecosystems in the Western Indian Ocean. Nature Sustainability, pp.1-10.

12. IPCC (2021) Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Masson-Delmotte *et al*.). Cambridge University Press.

13. The Global Tipping Points Report 2025 global-tipping-points.org

14. IPCC (2021) Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Masson-Delmotte, *et al*.), Cambridge University Press.

15. IPCC (2022) Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Portner *et al*.), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 3056 pp. doi.org/10.1017/9781009325844

16. IPCC (2021) Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Masson-Delmotte, *et al*.), Cambridge University Press.

17. van Woesik, R. *et al*. (2015) Keep up or drown: adjustment of western Pacific coral reefs to sea-level rise in the 21st century. Royal Society Open Science, 2(7), p.150181.

18. van Woesik, R. *et al*. (2018) Keeping up with sea-level rise: Carbonate production rates in Palau and Yap, western Pacific Ocean, PloS One, 13(5), p.e0197077.

19. Cacciapaglia, C.W. *et al*. (2020) Reduced carbon emissions and fishing pressure are both necessary for equatorial coral reefs to keep up with rising seas, Ecography, 43(6), pp.789-800.

20. IPCC (2021) Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Masson-Delmotte *et al*.). Cambridge University Press.

21. Hoegh-Guldberg, O. *et al*. (2014) The Ocean. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Barros, V.R., *et al*.), Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1655-1731

22. Vercelloni, J. *et al*. (2020) Forecasting intensifying disturbance effects on coral reefs, Global Change Biology, 26(5), pp.2785-2797.

23. Obura, D. *et al*. (2021) Vulnerability to collapse of coral reef ecosystems in the Western Indian Ocean. Nature Sustainability, pp.1-10.

24. McClanahan, T.R. *et al*. (2021) Environmental Variability and Threshold Model's Predictions for Coral Reefs. Frontiers in Marine Science, p.1774.

25. Cowburn, B. *et al*. (2018) Can luxury and environmental sustainability co-exist? Assessing the environmental impact of resort tourism on coral reefs in the Maldives, Ocean and Coastal Management, 158 (4), pp. 120-127

26. Glynn, P.W. *et al*. (2018) State of corals and coral reefs of the Galápagos Islands (Ecuador): Past, present and future, Marine Pollution Bulletin, 133, pp.717-733.

27. CMEP (2017) Caribbean Marine Climate Change Report Card 2017, (Eds. Paul Buckley *et al*.), Commonwealth Marine Economies Programme, 12pp.

28. Ramirez-Llodra, E. *et al*. (2011) Man and the last great wilderness: human impact on the deep sea, PloS One 6 (e22588).

29. Guinotte, J. M. *et al*. (2006) Will human-induced changes in seawater chemistry alter the distribution of deep-sea scleractinian corals? Frontiers in Ecology and the Environment, 4, 141–146.

30. Shantharam, A. *et al*. (2025) Multi- Taxon Predictions of Deep-Sea Corals and Sponges From Stacked Species Distribution Models in the United States West Coast Exclusive Economic Zone and Relation to Trawl Closure Zones. Diversity and Distributions, 2025; 31:e70005 doi.org/10.1111/ddi.70005

31. Montseny, M. *et al*. (2021) Active Ecological Restoration of Cold-Water Corals: Techniques, Challenges, Costs and Future Directions, Frontiers in Marine Science, 8:621151. doi.org/10.3389/fmars.2021.621151

32. Souter, D. *et al*. (2021) Status of coral reefs of the world: 2020 report. Global Coral Reef Monitoring Network (GCRMN) and International Coral Reef Initiative (ICRI). doi.org/10.59387/WOTJ9184

33. Donovan, M.K. *et al*. (2021) Local conditions magnify coral loss after marine heatwaves, Science, 372(6545), pp.977-980.

34. Knowlton, N. *et al*. (2021) Rebuilding Coral Reefs: A Decadal Grand Challenge. International Coral Reef Society and Future Earth Coasts, 56 pp. doi.org/10.53642/NRKY9386

35. Kleypas, J. *et al*. (2021) Designing a blueprint for coral reef survival, Biological Conservation 257: 109107.

36. Hughes, T.P. *et al*. (2017) Coral reefs in the Anthropocene, Nature, 546(7656), pp.82-90.

37. Hoegh-Guldberg, O. *et al*. (2008) Assisted colonization and rapid climate change, Science, 321(5887), pp.345-346.

38. Van Oppen, M.J. *et al*. (2015) Building coral reef resilience through assisted evolution, Proceedings of the National Academy of Sciences, 112(8), pp.2307-2313.

39. Bayraktarov, E. *et al*. (2020) Coral reef restoration efforts in Latin American countries and territories, PloS One, 15: e0228477 doi.org/10.1371/journal.pone.0228477

40. Voolstra, C.R. *et al*. (2021) Extending the natural adaptive capacity of coral holobionts, Nature Reviews Earth & Environment. 2021;2: 747–762. doi.org/10.1038/s43017-021-00214-3

41. www.allencoralatlas.org

42. GCRMN – Global Coral Reef Monitoring Network.

43. Duarte, C.M. *et al*. (2020) Rebuilding marine life, Nature 580, no. 7801: 39-51.

44. Bayraktarov, E. *et al*. (2020) Coral reef restoration efforts in Latin American countries and territories, PloS One, 15: e0228477 doi.org/10.1371/journal.pone.0228477

45. Duarte, C.M. *et al*. (2020) Rebuilding marine life, Nature 580, no. 7801: 39-51.

46. Hein, M.Y. *et al*. (2021) Perspectives on the Use of Coral Reef Restoration as a Strategy to Support and Improve Reef Ecosystem Services, Frontiers in Marine Science, 8:618303. doi.org/10.3389/fmars.2021.618303

47. Knowlton, N. *et al.* (2021) Rebuilding Coral Reefs: A Decadal Grand Challenge. International Coral Reef Society and Future Earth Coasts, 56 pp. doi.org/10.53642/NRKY9386

48. McLeod, I.M. *et al*. (2019) Mapping Current and Future Priorities for Coral Restoration and Adaptation Programs, 44 pp., available at icriforum.org.



Photo Matt Curnock / Ocean Image Bank

Appendix

Glossary of terms

Adaptive management: A structured, iterative process of robust decision making in the face of uncertainty, with the aim of reducing that uncertainty over time via system monitoring.

Anthropocene: A proposed geological epoch resulting from significant human-driven changes to the structure and functioning of the Earth system, including the climate system. It is being formalized within the geological community based on the stratigraphic evidence that human activities have changed the Earth system to the extent of forming geological deposits with a signature that is distinct from those of the Holocene, and which will remain in the geological record. Both stratigraphic and Earth System approaches to defining the Anthropocene consider the mid-20th century to be the most appropriate starting date, although other dates have been proposed and continue to be discussed. [IPCC]

Anthropogenic: Resulting from or produced by human beings. [IPCC]

Antipatharians: An order of soft deep-water corals, also known as black corals or thorn corals.

Aragonite: A mineral species of calcium carbonate ($CaCO_3$) with a crystal structure different from the other two forms of $CaCO_3$ (vaterite and calcite). It is precipitated from ocean surface waters mainly by organisms (e.g., coral) that use it to make their shells and skeleton. [CORIS-NOAA]

Assisted migration: The translocation of species beyond their historical range to locations that are expected to be more suitable under future climate change. (Backus and Baskett, 2019)

Biobanking: Generally, a collection of biological samples and associated information organized in a systematic way for research purposes. [Science Direct]

Biodiversity: The numbers and relative abundances of different genes (genetic diversity), species, and ecosystems (communities) in a particular area.

Calcite: A mineral made up of a crystalline form of calcium carbonate. Calcite coral skeletons are composed of the calcite form of calcium carbonate. [CORIS-NOAA]

Continental platform: Also known as continental shelf, the section of continental margin between the shoreline and the shelf break, or, where there is no noticeable slope, between the shoreline and the point where the depth of the superficial water is approximately between 100 and 200 meters. [UN]

Coral: An invertebrate related to jellyfish and anemones, that is made up of millions of polyps that deposit calcium carbonate and form a colony.

Coral bleaching: The paling in color of corals resulting from a loss of symbiotic algae. Bleaching occurs in response to physiological shock caused by abrupt changes in temperature, salinity, and turbidity. [IPCC]

Cryopreservation: The process of preserving cells and tissues at very low temperatures. [GBR — altered]

Deep-water corals: Corals that grow at depth, extending down to 6,000 m, along the shores of all continents at depths where reduced light levels do not allow them to support photosynthetic symbionts. Deep-water corals typically form habitats consisting of loose, branching corals that do not form reefs, but nevertheless represent an important habitat for many organisms.

Ecological services: Ecosystem processes or functions which have value to individuals or society. [IPCC — altered]

Ecosystem: A distinct system of living organisms, together with their physical environment. The boundaries of what could be called an ecosystem are somewhat arbitrary, depending on the focus of interest or study. The extent of an ecosystem may range from very small spatial scales to, ultimately, the entire Earth.

Fauna: All animals living in an area or in a particular period of history. [OLD]

Greenhouse gas emissions: Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. This property causes the greenhouse effect. Water vapor (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), and ozone (O_3) are the primary greenhouse gases in the Earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances which are dealt with under the Montreal Protocol. Besides CO_2, N_2O, and CH_4, the Kyoto Protocol deals with the greenhouse gases sulfur hexaflouride (SF_6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). [IPCC]

Intellectual Property (IP): Creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce. (WIPO).

Macroalgae: Algae that project more than one centimeter above the substratum. [CORIS-NOAA]

Mesophotic: The deepest half of the photic zone (starting at 30-40 m and extending to over 150 m) where photosynthetic rates are much reduced relative to the upper half of the photic zone. [CORIS-NOAA]

Ocean acidification: The reduction in the pH of the ocean over an extended period, typically decades or longer, which is caused primarily by uptake of carbon dioxide (CO_2) from the atmosphere, but can also be caused by other chemical additions or subtractions from the ocean. Anthropogenic ocean acidification refers to the component of pH reduction that is caused by human activity. [IPCC]

Pre-industrial era: The multi-century period prior to the onset of large-scale industrial activity, which began in England during the second half of the 18th century and spread to Europe and later to other countries including the United States of America. The Industrial Revolution marks the beginning of a strong increase in the use of fossil fuels and emissions, particularly fossil carbon dioxide. [IPCC — altered]

Reef: The three-dimensional structure developed by the accumulation of carbonate that tropical, warm-water corals deposit over time. Coral reefs represent one of the most biodiverse habitats in the planet, playing a fundamental role in coastal geomorphology and protection in tropical regions.

Reef accretion rate: The change in mass over time of a coral reef, vertically, horizontally, or in combination. [Blanchon *et al*. (2017)— inferred]

Resilience: The amount of change a system can undergo without changing state. [IPCC]

Ridge systems: An underwater mountain range, usually in mid-ocean, formed by plate tectonics [Science Daily — altered]

Rubble stabilization: Innovative techniques that help secure loose rubble (large areas of broken-down coral fragments) to allow young corals to survive and grow in the rubble beds and form stable new reefs.

Scale: To increase or decrease performance and cost in response to changes in application and system processing demands. Scalability is the measure of a system's ability to scale. [Gartner]

Sea surface temperature (SST): The subsurface bulk temperature in the top few meters of the ocean, measured by ships, buoys, and drifters. From ships, measurements of water samples in buckets were mostly switched in the 1940s to samples from engine intake water. Satellite measurements of skin temperature (uppermost layer; a fraction of a millimeter thick) in the infrared or the top centimeter or so in the microwave are also used, but must be adjusted to be compatible with the bulk temperature.

Seamounts: A submarine mountain, usually conical in shape and volcanic in origin, that rises 1,000 meters or more above the sea floor. Some definitions of seamounts do not include the height criterion. [CORIS-NOAA]

Selective breeding: The process by which humans choose individuals with specific heritable phenotypic traits to breed together and produce offspring. For corals, selective breeding is the process of producing and rearing corals from eggs through to colonies that are recruited into the population. [Humanes *et al*. (2021)—altered]

Sexual recruits: Coral larvae that have successfully established themselves in suitable settlement substrate and are ready to begin forming a colony by dividing into clones. [Secore—altered]

Shared Socioeconomic Pathway: Shared Socioeconomic Pathways (SSPs) are scenarios of projected socioeconomic global changes up to 2100. They are used to derive greenhouse gas emissions scenarios from different climate policies.

Shelf breaks: Near-shore bathymetry (undersea topography) characterized by rapid and substantial increases in depth that are continuous with the deeper parts of the ocean. [CORIS-NOAA—altered]

Slope: The sloping sea bottom of the continental margin that begins at a depth of about 100 to 150 m at the shelf edge and ends at the top of the continental rise or in a deep-sea trench. [CORIS-NOAA]

Stressors: A physical, chemical, or biological factor that adversely affects organisms; an agent, condition or similar stimulus that causes stress to an organism.

Substrate: The material making up the base upon which an organism lives or to which it is attached. [CORIS-NOAA]

Substratum: The sediment at the sediment-water interface on and in which organisms live. [Walker (1979)]

Sustainably: In a way that meets the present generation's needs without compromising the ability of future generations to meet their needs. [IPCC—altered]

Symbiotic: Describes a relationship between two species of organisms in which both members benefit from the association (mutualism), or where only one member benefits but the other is not harmed (commensalism), or where one member benefits at the expense of the well-being of the other (parasitism).

Transdisciplinary approach: A research effort conducted by investigators from different disciplines working jointly to create new conceptual, theoretical, methodological, and translational innovations that integrate and move beyond discipline-specific approaches to address common problems.

Undersaturated: The condition in which the amount of a substance currently dissolved in water is less than the maximum possible dissolvable amount. [Roger Williams Univ.—altered]

Zooxanthellae: A group of dinoflagellates living endosymbiotically in association with one of a variety of invertebrate groups (e.g., corals). In corals, they provide carbohydrates through photosynthesis, which are used as one source of energy for the coral polyps. They also provide coloration to corals. [CORIS-NOAA]

[Glossary sources]

Backus and Baskett (2019)
https://conbio.onlinelibrary.wiley.com/doi/pdf/10.1111/cobi.13736

Blanchon *et al.* (2017)
https://www.frontiersin.org/articles/10.3389/feart.2017.00078/full

CORIS-NOAA
https://www.coris.noaa.gov

Gartner
https://www.gartner.com/en/information-technology/glossary/scalability

GBR — altered
https://www.barrierreef.org/news/explainers/what-is-coral-cryopreservation

Humanes *et al.* (2021)
https://doi.org/10.3389/fmars.2021.669995

IPCC:
https://www.ipcc.ch/site/assets uploads/2018/03/wg2TARannexB.pdf

https://www.ipcc.ch/site/assets/uploads/2018/11/sr15_glossary.pdf

OLD
https://www.oxfordlearnersdictionaries.com/us/definition/english/fauna

Roger Williams Univ.
https://rwu.pressbooks.pub/webboceanography/chapter/5-4-dissolved-gases-oxygen/

Science Daily
https://www.sciencedaily.com/terms/mid-ocean_ridge.htm

Science Direct
https://www.sciencedirect.com/topics/nursing-and-health-professions/biobank

Secore
https://www.secore.org/site/corals/detail/coral-reproduction.15.html

UN:
https://www.un.org/depts/los/clcs_new/continental_shelf_description.htm

Walker (1979)
https://link.springer.com/referenceworkentry/10.1007/3-540-31078-9_135





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