STATUS OF CORAL REEFS OF THE WORLD: 2025

RESULTS AND IMPLICATIONS FOR THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

SCIENCE-TO-ACTION BRIEF



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Coral reefs worldwide are in decline, and the interval in which they recover between disturbances is shortening. Successive marine heatwaves, driven by climate change, are causing widespread coral mortality and reducing the capacity of reefs to recover between disturbances. This threatens one of the planet's most biodiverse ecosystems and the benefits coral reefs provide for up to a billion people.

The Global Coral Reef Monitoring Network (GCRMN) "Status of Coral Reefs of the World: 2025" Report provides Parties and observers to the United Nations Framework Convention on Climate Change (UNFCCC) with the most comprehensive global assessment of coral reef status and trends to date. The report examines patterns of change from 1980-2024 of hard coral and macroalgal cover, providing an essential evidence base for climate-resilient reef management. Contributed from 600 partners across more than 120 countries, territories, and economies, the report draws on over 21.1 million observations from 87,299 surveys representing 36,886 sites. As ocean temperatures continue to climb and local pressures mount, the window to safeguard these ecosystems is rapidly closing - making timely, evidence-based action more critical than ever.

The report provides timely evidence for UNFCCC processes, particularly the second Global Stocktake (GST2), by documenting observed climate impacts, ecosystem resilience and adaptation-relevant trends, including the effects of manageable local pressures on recovery, across coral reef systems worldwide.

PRIORITIES FOR UNFCCC:

Raise mitigation ambition to keep 1.5°C within reach and minimise future reef loss	Scale up adaptation finance for reef-dependent communities and ecosystems.	Strengthen inclusion of coral reefs in NDCs, NAPs and adaptation reporting.	Invest in long-term monitoring systems as critical climate infrastructure.

WHY THE GCRMN MATTERS FOR THE UNFCCC

Effective climate action under the Paris Agreement depends on **robust, long-term monitoring and observational data** that can inform assessments of climate impacts, adaptation effectiveness, resilience outcomes and emerging risks. The first Global Stocktake in 2023 recognised the importance of protecting and restoring ocean and coastal ecosystems as part of the global climate response. It also highlighted that Parties are not yet collectively on track to achieve the goals of the Paris Agreement, identifying the urgent need to raise ambition. Despite the Paris Agreement's goal of limiting warming to 1.5°C, current policies and near-term trajectories point towards an exceedance of this threshold as stated in UNEP's Limiting Overshoot report released in September 2026. For coral reefs, limiting future warming remains essential, but it must be accompanied by action that strengthens resilience to the warming already occurring.

The GCRMN provides the **world's largest long-term review of coral reef status and trends**, offering a globally consistent baseline of ecosystem condition and cumulative marine pressures. The observed decline in global hard coral cover (**~9.5% relative decline between 1980-2009 and 2020-2024**) reflects the primary impact **of climate-driven heat stress, alongside compounding local pressures,** highlighting the importance of sustained observations for climate action. These findings further reinforce the urgent need for enhanced mitigation ambition and strengthened adaptation efforts.

The UNFCCC's Global Mutirão decision (Decision 1/CMA.7), adopted at COP30 in Belém, similarly calls for integrated action on climate change, biodiversity loss, and land and ocean degradation, reinforcing the importance of the long-term coral reef observations provided by the GCRMN to inform ecosystem-based climate action.

The GCRMN also contributes to the broader evidence ecosystem by providing globally consistent ecological observations that can help track ecosystem resilience, climate impacts and adaptation outcomes in coastal and marine systems.

WHY CORAL REEFS MATTER

$9.9 trillion
Ecosystem services provided each year

$36 billion
Reef tourism value each year

97%
Wave energy a healthy reef can absorb

5.3 million
People protected from flooding – along with $109B of GDP each year

>25%
of marine species depend on reefs but reefs cover <0.2% of the ocean floor

104 million
People now live within 5km of a coral reef

KEY MESSAGES FOR UNFCCC PARTIES:

- **Coral reefs are among the clearest indicators of climate change impacts already occurring today.** The observed decline in global coral cover demonstrates that current warming levels are already driving significant ecosystem change.

- **Limiting warming remains the most important action for coral reef survival.** Local, effective management reduces cumulative stress and improves resilience, but long-term reef persistence ultimately depends on achieving the Paris Agreement temperature goals with the 1.5°C temperature limit remaining critical to limit further losses of coral reefs and keep recovery windows open.

- **Coral reefs should be recognised and invested in as critical adaptation infrastructure.** Healthy reefs support coastal protection, food security, livelihoods, and economic resilience for up to a billion people. Investing in coral reef conservation and resilience should therefore be recognised as an investment in adaptation and climate resilience.

- **Long-term reef monitoring should be strengthened.** Sustained observations are necessary to track climate impacts, adaptation outcomes, and progress toward global climate goals.

- **Parties should use coral reef evidence to inform the second Global Stocktake, Nationally Determined Contributions, National Adaptation Plans,** adaptation communication, and relevant reporting under the Paris Agreement. The GCRMN provides one of the most extensive long-term datasets available for assessing ecosystem responses to climate change.

- **Climate finance** for coral reefs should be substantially scaled up across adaptation, resilience, capacity-building, monitoring and loss-and-damage-related activities. Coral reef conservation, resilience-building, monitoring, and restoration remain substantially underfunded despite their importance for adaptation, biodiversity, and sustainable development.

- **Coral reefs are an indicator of climate risk and adaptation limits.** Continued reef decline despite local management interventions demonstrates that some climate impacts cannot be addressed through adaptation alone, reinforcing the need for accelerated emissions reductions while informing emerging discussions on adaptation limits and loss and damage.

SUPPORTING IMPLEMENTATION OF THE UNFCCC

The UNFCCC sets no targets specific to coral reefs. Rather, the relevance of coral reefs is reflected through the Paris Agreement's temperature goal, the Ocean and Climate Change Dialogue, the Global Stocktake, the Global Goal on Adaptation, and the Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs), through which Parties implement climate action. The GCRMN 2025 report supports these processes in two complementary ways: by providing direct evidence of observed climate impacts through long-term monitoring data; and by informing broader climate policy, including mitigation, adaptation, resilience-building, and national climate planning.

ELEMENTS DIRECTLY INFORMED BY GCRMN DATA AND FINDINGS

- **The 1.5°C Temperature Goal (Paris Agreement Article 2):** The report provides direct evidence of what warming means for coral reef ecosystems. **Global marine heatwaves leading to global coral bleaching events have increased in frequency and severity, with coral bleaching now a recurring climate-driven disturbance** rather than an episodic event. Four major events have triggered global coral loss since 1998 (~6.5%, ~9.9%, ~6.6%, and ~8.9% respectively). Globally, hard coral cover has experienced a relative decline of ~9.5% (1980-2009 vs 2020-2024), with current levels at ~25.8%. Reefs are among the clearest ecological indicators of the impacts of warming and provide a measurable signal of the consequences of insufficient progress towards achieving the long-term temperature goal.

- **NDCs and NAPs:** The report demonstrates that coral reefs can recover following a disturbance where thermal stress is reduced and local conditions remain favourable, however, increasing frequency and intensity of marine heatwaves is reducing recovery windows in many regions. Evidence that reducing local stressors and strengthening protected areas can improve resilience provides a basis for Parties to embed coral reef protection in national plans as both an ecosystem-based adaptation and a foundation for climate-resilient coastal development and nature-based mitigation. These findings support the integration of coral reef protection and resilience into NDCs and NAPs, including commitments related to ecosystem-based adaptation, climate-resilient protected and conserved areas, water quality improvement, sustainable fisheries management, and coastal resilience planning. Parties should explicitly incorporate coral reefs and associated blue ecosystems into NDCs, NAPs, adaptation communications, and relevant sectoral strategies where ecologically and economically significant.

- **The Global Stocktake (Paris Agreement Article 14):** The Global Stocktake assesses collective progress towards the goals of the Paris Agreement, drawing on the best available science and information. As the second Global Stocktake (GST2) begins in 2026, the GCRMN provides one of the few globally consistent

long-term ecological datasets showing how marine ecosystems are responding to climate change. Coral reef condition is a valuable indicator of climate impacts and resilience outcomes, and highlights the importance of sustaining global observing systems, with monitoring across all 10 GCRMN regions, that can inform future stocktake cycles.

- **The Global Goal on Adaptation (Paris Agreement Article 7):** Coral reefs are living infrastructure that underpin coastal resilience, supporting food security, livelihoods, coastal protection and economies for close to one billion people. The number of people living within 5 km of coral reefs reached around 104 million by 2020, a 46% increase over two decades. This supports the ecosystem and food security dimensions of the UAE Framework for Global Climate Resilience, positioning reef decline within the adaptation agenda. Following the conclusion of the UAE–Belém work programme, a consolidated set of 59 Belém Adaptation Indicators were adopted in 2025. Coral reefs are not only early warning systems of climate impacts, they may also provide a useful ecosystem-based indicator of resilience outcomes under the UAE Framework for Global Climate Resilience, particularly across food security, ecosystem integrity and coastal resilience dimensions.

- **Loss and Damage:** The accelerated decline of coral reef ecosystems illustrates the increasing risks of irreversible and potentially permanent climate impacts. For many reef-dependent communities, coral reef loss has implications for livelihoods, food security, cultural heritage, ecosystem services and economic resilience. Long-term reef observations can therefore contribute to understanding, assessing and responding to climate-related loss and damage.

- The report also provides relevant context for discussions on **adaptation limits, ocean-climate linkages, and monitoring capacity.**

ENABLING EFFECTIVE MONITORING AND IMPLEMENTATION

Coral reef monitoring is not simply a research activity, it is essential climate infrastructure that provides the information needed to understand environmental change, assess climate-related risks, evaluate the effectiveness of adaptation measures, and support evidence-based decision-making. As climate impacts intensify, sustained reef observations form a critical part of the infrastructure that enables governments, communities, and managers to respond effectively and build resilience.

Achieving the full value of coral reef observations for climate action requires sustained financial investment in monitoring, capacity development, and institutional support to strengthen and maintain effective long-term monitoring and reporting systems.

This is particularly critical in developing countries, least developed countries, and SIDS, where reliance on coral reefs is often greatest and where capacity and data gaps can limit effective assessment, management, and decision-making. Supporting these systems is essential to ensuring that all Parties have access to the evidence needed to design, implement, and track effective and equitable climate action.

By providing a common scientific evidence base on the impacts of climate change on coral reefs, the GCRMN supports policy discussions under the UNFCCC while also informing biodiversity conservation, sustainable development, and wider ocean governance.

CONCLUSION

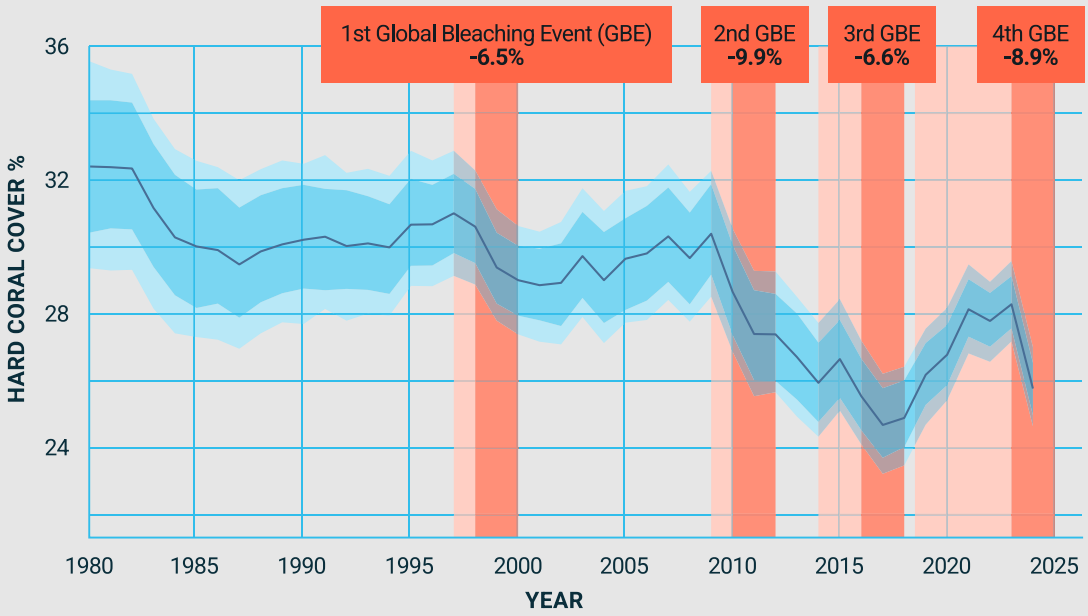
At this moment, the urgency of climate action is greater than ever and the scientific evidence is stronger than ever. In its July 2025 advisory opinion on climate change, the **International Court of Justice** affirmed States' obligations under international law to prevent significant harm to the climate system and underscored the importance of international cooperation. **The opinion highlights the growing importance of robust scientific evidence in assessing climate impacts and informing policy responses.**

Effective stewardship of coral reefs requires understanding and responding to ecosystem change at all levels, supported by sustained monitoring and forward-looking assessment.

The GCRMN proudly supports the multilateral cooperation and evidence-based decision-making needed to accelerate implementation of the Paris Agreement. The latest GCRMN findings demonstrate that coral reefs are already experiencing profound climate impacts and that future trajectories will depend on policy choices made this decade. Humanity's actions have been the primary cause of the decline of coral reefs, yet there is also a powerful opportunity for humanity to support their recovery and shape more positive future trajectories.

The findings reinforce the need for accelerated emissions reductions, strengthened adaptation efforts, including well-managed, connected protected area networks and improved water quality, sustained investment in monitoring systems, and greater integration of ocean considerations across UNFCCC processes. As Parties prepare for GST2 and the next generation of climate commitments, the evidence from the GCRMN underscores a clear message: coral reefs are both a frontline indicator of climate impacts and a critical component of climate resilience. Protecting their future will require accelerated emissions reductions, scaled-up adaptation and resilience investment, strengthened monitoring systems, and greater integration of ocean ecosystems across climate policy and finance frameworks.

KEY FINDINGS



Change in global hard coral cover, 1980-2024. Source: GCRMN

KEY POINTS

Climate change is the dominant driver

Climate-driven marine heatwaves – and the global bleaching events they drive – are the primary cause of the global decline in hard coral cover, now a recurrent and escalating pressure rather than episodic. Major declines align with the events of 1998, 2010, 2016 and 2023-24.

Reefs can recover, if given the chance

Following the third global bleaching event, global hard coral cover rose by a relative ~6% between 2017 and 2019 — showing reefs recover when disturbance eases — but shortening windows between events are driving a stepwise decline in coral cover.

The picture varies by region

Of the 10 GCRMN regions, four show long-term declines, four show no net change, and two show increases relative to the reference period. Effective protection needs coordinated local, national and global action.

What we measure matters

Hard coral cover alone does not fully represent reef condition. Sustained long-term monitoring of a broader set of indicators — including macroalgae, which remains low globally — is essential to detect change, attribute drivers and manage adaptively.

The future is not fixed

At the current frequency of global bleaching events (every 5–6 years) reefs are expected to keep declining; ambitious emissions cuts combined with effective local management offer the strongest pathway to halt the loss of hard coral cover.

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The GCRMN Report Communications & Policy Taskforce is gratefully acknowledged for its contribution to the development of this Science-to-Action brief. It demonstrates the enduring commitment, expertise and collaborative spirit of the global coral reef community, and its shared dedication to informing policy and action through science.

This brief synthesises key findings from the "GCRMN Status of Coral Reefs of the World 2025", to support the implementation of the UNFCCC. The conclusions and recommendations presented here should not be interpreted as an official policy, decision, or position of any government, institution, or organisation.

To read the full report, visit:
gcrmn.net/2025-report

GCRMN
Global Coral Reef Monitoring Network

ICRI
International Coral Reef Initiative