

Value Proposition and Description of the Global Coral Reef Monitoring Network (GCRMN) DRAFT Brief [170821]

The Global Coral Reef Monitoring Network (GCRMN) is the world's premier coral reef data network, with a proven track record of providing authoritative analysis on the health of the world's coral reefs to inform sustainable development.

GCRMN engages scientists, reef managers and other stakeholders in a network tracking coral reef status and trends. By reporting on findings at global and regional levels, GCRMN informs policy as well as the public of environmental change and its implications.

Specifically, GCRMN

- ensures reliability and scientific credibility in coral reef monitoring and reporting at a global scale;
- provides enhanced access to coral reef data for a variety of uses, from policy development and environmental management to research and outreach;
- enables governments, organizations and businesses to measure progress towards adopted development, sustainability, climate change and conservation targets.

Background

The Global Coral Reef Monitoring Network (GCRMN) was established by the International Coral Reef Initiative (ICRI, www.icriforum.org) in 1995, initially with the primary task of reporting on the condition of the world's coral reefs in the context of the development of the ICRI Call to Action. Since then GCRMN has produced a range of global, regional and thematic reports on coral reef status and trends.

Why is GCRMN needed?

Coral reefs are exceptionally biodiverse. Occurring in more than 100 countries, human dependence on their ecosystem services is high. They are under significant direct pressure from human activities, and are uniquely vulnerable to climate change as well as ocean acidification. This makes coral reefs a sensitive indicator system for coastal ocean health, climate change and ocean acidification impacts, and their implications for society.

Tracking and reporting on coral reef status and trends is needed to understand the extent and rate of change, and to inform appropriate responses. Because coral degradation is taking place at global level, driven by global as well as local processes, globally coherent coral reef observation is required. This directly supports planning and tracking of implementation in relation to sustainable development, climate change and biodiversity conservation, and has broad application in awareness raising and outreach. High quality coral reef data will also support research, including in relation to ecology and ecosystem service provision, and observational data is needed for modelling in order to better predict future reef responses to climate stress.

In UN Environment Assembly Resolution 2/12 on coral reefs¹, UN member states recognized the importance of the GCRMN, and called on UN Environment to “*support further development of coral reef indicators, regional coral reef assessments, and preparation of a global report through GCRMN*”. Further to this, the ICRI membership adopted a resolution at the ICRI General Meeting 31², requesting the ICRI Secretariat and UN Environment to “*develop and initiate implementation of a roadmap for strengthening GCRMN*”. The importance of GCRMN was also recognized at the Ocean Conference, New York, 5-9 June 2017, e.g. in the partnership dialogue on ocean acidification and climate change.

Relevance to global goals and targets

GCRMN data and reporting is particularly relevant in relation to SDG 14. *Conserve and sustainably use oceans, seas and marine resources*; targets: 14.2 sustainably manage and protect ecosystems and strengthen resilience; 14.3 minimize and address impacts of ocean acidification; and 14.a Increase scientific knowledge and capacity.

¹ [UN Environment Assembly resolution 2/12 on Sustainable Coral Reefs Management](#)

² http://www.icriforum.org/sites/default/files/ICRIGM31_Resolution_GCRMN.pdf

It is also of relevance to, for example, SDG 1, especially target 1.5 on building resilience and reducing exposure and vulnerability to climate-related extreme events environmental shocks and disasters; SDG 2, especially target 2.4 on sustainable food production systems; SDG 8 especially targets 8.4 on resource efficiency in consumption and production and decoupling economic growth from environmental degradation; and 8.9 on sustainable tourism; SDG 12, especially targets 12.2 on sustainable management and efficient use of natural resources; and SDG 13, especially targets 13.1 on strengthening resilience and adaptive capacity to climate-related hazards and natural disasters and 13.2 on integrating climate change measures into national policies, strategies and planning.

Coral reefs provide an indicator system for climate change as well as ocean acidification impacts, and progress in addressing climate change. GCRMN reporting is thus of relevance in the context of adaptation and mitigation planning at multiple levels, and can guide management that builds resilience.

Tracking of coral reef status and trends remains important in biodiversity reporting, including on the Aichi Targets and their possible successor targets.

What does GCRMN aim to achieve?

Goal 1. Improve understanding of coral reef status and trends, globally and regionally.

- Establish, provide guidance on and demonstrate best practice on indicators and protocols for long term monitoring
- Quantify change in different components of the reef community
- Identify and quantify impacts of climate change and ocean acidification on coral reefs. Provide guidance on response to events causing severe coral reef decline (focus on bleaching, also disease, pests and major physical/weather events);
- Identify and assess reef recovery processes important for maintaining and restoring reefs
- Identify and quantify impacts of direct pressures on coral reefs associated with human use of coral reef ecosystem services and other human activity
- Encourage monitoring and reporting especially where it is comparatively weak
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Goal 2. Analyse and communicate coral reef status and trends in support of policy development, environmental management and public awareness.

- Provide authoritative, global, regional and local scale reporting on coral reef status and trends
- Provide science-based recommendations on appropriate policy and management responses to coral reef change
- Track progress towards internationally adopted goals and targets, in particular relevant SDG, climate change and biodiversity conservation targets
- Establish and maintain a global community of practice for exchange of information and sharing of knowledge about reef status, trends and responses
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Goal 3. Enable and encourage greater utilization of coral reef data, including in research

- Enhance access to coral reef data for ecological, climate change, ocean acidification other research, as well as for management planning at multiple scales
- Contribute to modelling of future reef conditions by providing in-situ ecological data
- Contribute to development and application of new techniques and technologies for coral reef monitoring and research, including e.g. remotely sensed products, automated analysis of in situ photo and video data etc., by providing data and other inputs
- Establish responsive communications networks to collate, synthesize and disseminate data within timeframes needed to provide timely advice towards for local, regional or global management responses...

Strategy for coral reef monitoring and reporting

Primary observation

Coral cover has already been defined as an Essential Ocean Variable by GOOS. GCRMN will further develop common core variables for coral reef monitoring to be applied globally. Development of region-specific variables will be pursued where relevant (this has been piloted by GCRMN in the Caribbean). GCRMN will also provide recommended sampling standards that improve quality control and ensure data consistency and interoperability, across different tiers (from community protocols to more advanced).

GCRMN will make use of a variety of observing platforms, including in particular measurements carried out through national, local and institutional monitoring programmes, including participatory monitoring activities; measurements carried out as part of research activities or in association with scientific cruises; and other in situ measurements that meet methodological and quality criteria. Where feasible GCRMN will seek to enhance the application of automated sampling, remote sensing and other technologies.

Data management and access

GCRMN will apply data standards compatible with Darwin Core and Ecological Metadata Language (EML). A global GCRMN data repository or metadatabase will be developed. At the regional level, GCRMN regional committees may maintain regional data repositories that enable greater customization and further control over data access (e.g. time-bound moratoria), linked with the global repository. Linking the GCRMN data repository with other relevant ocean data sets, including those of related initiatives such as GOA-ON will enable greater synergies in research as well as reporting. OBIS provides an existing platform that collaborates with scientific communities to facilitate access to, and application of, biodiversity and biogeographic data and information on marine life.

Reporting

Regional periodic assessment reports will be prepared, providing detailed scientific analyses. The regional reports provide a basis for development of more synthetic global reports tracking global change. Reports will establish a direct link to relevant targets and goals and report on status and progress in relation to these. Regional GCRMN reports will be prepared in collaboration/consultation with Regional Seas and where relevant other regional intergovernmental mechanisms to support policy uptake. Responding to need, GCRMN may also prepare thematic reports addressing specific global or regional issues.

Network and Governance

Oversight

As an Operational Network of ICRI, GCRMN structure and governance is approved by ICRI through its General Meeting. The GCRMN Working Group chaired by ICRI Secretariat and UN Environment functions as a Steering Group for GCRMN with responsibility for oversight and core functioning of the network, including:

- oversee further elaboration, finalization and implementation of GCRMN's governance and implementation plan;
- promote awareness of the network, its role and value, at the regional and global levels and with potential funders, and expand strategic partnerships of the network;
- develop and establish appropriate coordination arrangements for the network. This will entail establishing a partnership with a suitable host institution (e.g. national scientific/research institution) and jointly with that institution seeking grant funding for key aspects of network activities and coordination;
- support and oversee the coordination of the network;
- encourage development of monitoring capacity and resourcing of monitoring efforts, especially in geographic areas of particular concern.

Coordination

Coordination of the network by a scientific/research institution will provide day-to-day oversight, scientific leadership and engagement with the membership. Specifically, the global coordinator will

- oversee network activities at global level, including data management, quality control, analysis, and reporting;
- maintain active liaison with regional committees and the membership and support and guide them in relation to monitoring and reporting, and seek to expand the network membership;
- lead the development of products, including conceptualization of new products and development and resourcing of activities that contribute to achieving GCRMN's goals;
- represent the network internationally and liaise with other relevant bodies and organizations;
- support regional efforts to enhance capacity and capability of network members
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GCRMN Regional Committees operating under the guidance of the global coordinator...

- facilitate network activities at regional level, including data management, quality control, analysis, and reporting;
- maintain active liaison with the membership and support and guide them in relation to monitoring and reporting, seek to expand the network membership, and liaise with other relevant bodies and organizations;
- develop and implement activities and prepare products responding to needs of the region;
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Expert Communities

The GCRMN Working Group chaired by ICRI Secretariat and UN Environment will at least initially provide overall technical oversight of the network.

SocMon, the socioeconomic monitoring initiative of GCRMN, brings together social science expertise and advances global and regional understanding of human interactions with and dependence on coastal resources.

The Global Ocean Observing System (GOOS, sponsored by IOC, UN Environment, WMO and ICSU) has developed a Framework on Ocean Observing. The GOOS BioEco Panel can guide GCRMN on applying this in development and implementation of the network as well as identification/description of Essential Ocean Variables.

The Ocean Biogeographic Information System (OBIS) provides a global data sharing and clearing house for marine biodiversity data, including expertise in relation to data repository requirements and data standards.

The Global Ocean Acidification Observing Network (GOA-ON) and GCRMN can be mutually supportive e.g. in relation to improve understanding of coral reef response to ocean acidification and generating data that can support research and modelling of ocean acidification impacts.

The International Society for Reef Studies (ISRS) as well as regional affiliates provides a global network of scientific expertise that can help support and advise GCRMN activities and network members on technical aspects of monitoring, coral reef impacts, ecology, recovery and resilience.

Implementation communities

Regional GCRMN committees or nodes, under the guidance of the Global Coordinator, will lead regional networking; facilitate data collation and reporting; and encourage, facilitate and support monitoring and reporting especially where it is comparatively weak, to expand the network.

Partners/members include any entities that undertake coral reef monitoring and provide data into the system in keeping with established practices, e.g. research and academic institutions, national management agencies, protected area agencies, civil society organizations, businesses etc. These are the fundamental building blocks of the network, enabling it to function and deliver against established goals.

Resource Requirements

As a network, GCRMN is made up of and leverages input provided by partners/members. This includes monitoring data that has been funded, generated and submitted by a range of entities worldwide. Several institutions contribute expertise towards GCRMN development as well as reporting. Publication of past GCRMN reports has commonly been financially supported by a range of entities on an ad hoc basis. Long-term core support towards GCRMN coordination and development has been provided by US Department of State, through UN Environment. Core support for developing GCRMN as an ocean observation network is provided by France, through UN Environment.

Full implementation of GCRMN as an ocean observing network requires an ongoing and long-term commitment to the network among all its constituents. Additional institutional and financial support is also needed to enable

- Global coordination, including scientific leadership
- Development of data management infrastructure and protocols
- Preparation of a global and regional reports
- Establishment of regional committees, development of regional data inventories and preparation of regional reports
- Establishing and maintaining efficient communications pathways from data sources to decision makers
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