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A MARINE ECOSYSTEMS RECOVERY STRATEGY

Part II: Coral Reef Resilience

DRAFT

Report compiled in collaboration with the Zoological Society of London



A Marine Ecosystems Recovery Strategy

Marine ecosystems provide critical ecosystem services for humankind. The oceans regulate the Earth's temperature, cycle its nutrients, have taken up almost half of anthropogenic CO₂ emissions, and provide nearly half the oxygen in the atmosphere. More than 1 billion people worldwide depend on the marine environment for goods and services such as coastal protection, food, income and livelihoods. Marine fish are critical to food security, particularly in coastal developing countries.

However, the oceans are in crisis. Climate change, pollution, coastal development and overfishing seriously threaten marine ecosystem integrity and the way of life for the millions of people dependent on these ecosystems.

Legislators play a central role in developing, ratifying and monitoring the enforcement of domestic legislation, as well as in holding their governments to account over international commitments. The GLOBE Marine Ecosystems Recovery Strategy (MERS) will serve as an action plan for legislators, recommending a range of international and national measures where legislators can make an important difference in addressing the drivers of marine ecosystem degradation.

The strategy focuses on three key aspects of the marine environment:

1. Marine fisheries
- 2. Tropical coral reef ecosystems**
3. Coastal shelf marine ecosystems

The strategy may also include additional related topics in the future. Each part of the GLOBE MERS will contain legislative measures for national and regional parliaments, as well as proposals for advocacy at a regional and international level. These recommendations are supported by background documents developed in national and regional workshops by leading experts, policymakers and legislators.

When finalised, all three parts of the strategy will be discussed and agreed by legislators of the GLOBE International Commission on Land Use Change and Ecosystems. Consensus will therefore be built across party-political lines and national borders on the actions needed to restore marine ecosystem health and productivity that both secure and increase the goods and services available to humankind.

This document presents policy proposals for tropical shallow-water coral reef ecosystems, which form Part II of the MERS.

Part 2: Policy Proposals for Tropical Coral Reef Ecosystems

Tropical shallow-water coral reefs are critically threatened by the cumulative and synergistic effects of climate change and direct human impacts. Temperature-induced mass coral bleaching and ocean acidification resulting from rising CO₂ emissions constitute the most serious long-term threat to coral reefs; a global atmospheric CO₂ concentration of 450 ppm is widely accepted to be the critical threshold for coral reef ecosystem collapse and will be reached between 2030 and 2040 at current emission rates. Peaking of CO₂ levels before this threshold is crossed, followed by a long-term reduction to safe levels for coral reefs (350 ppm), is required for coral reefs to survive as a functioning ecosystem.

The coral reef crisis is also a crisis of management. All but the most remote coral reefs have already been heavily impacted by direct human pressures. Overfishing, destructive fishing practices, coastal pollution and coastal development account for most of these impacts, which not only destroy and degrade coral reefs but also considerably reduce their resilience to the effects of climate change. Increasing coral reef resilience by reducing direct human impacts will slow the rate of coral reef degradation caused by climate change, and, if CO₂ levels peak at or below 450 ppm, could prevent ecosystem collapse. Furthermore, even if CO₂ levels continue to rise beyond 450 ppm, increased ecosystem resilience will buy critical time for reef-dependent communities to adapt. If a swift and significant reduction of direct human impacts is not achieved, the continued loss of ecosystem resilience will increase the likelihood and rate of coral reef ecosystem collapse.

Investment now to increase coral reef resilience will provide continued benefits to society through the provision of marine resources and ecosystem services into the future. Although this investment will be

significant, the costs of inaction are likely to be substantially greater. Failure to address climate change effects and direct impacts is predicted to increase human vulnerability, decrease food security, cause social disruption and threaten security in some regions. At least 30 million of the world's poorest and most vulnerable people in coastal communities are completely dependent on coral reefs as their primary means of food production, income and livelihood. For these people, coral reef ecosystem collapse will be truly catastrophic unless action is taken to reduce their dependence and build their capacity to adapt to reef loss.

Swift and effective action to increase coral reef resilience to climate change and ocean acidification is urgently required to reverse the current trend in coral reef ecosystem decline. Legislators must play a central role in leading this response by reforming legislation, mobilising new funds, ratifying international commitments and scrutinising government policy and implementation, to ensure that coral reefs remain for the use of future generations.

Coral reef ecosystems have already received considerable attention from governments and inter-governmental and non-governmental organizations (NGOs) seeking to improve coral reef conservation and management (refer to detailed list in the GLOBE Action Plan for Coral Reefs). Although progress has been made, there is a real need to scale-up and accelerate action. By engaging with and encouraging support for current and future programmes and initiatives, GLOBE legislators can make a significant contribution to the protection of coral reef ecosystems and the services they provide for humanity.

Key to this step-change in political action is financing. All potential financial mechanisms and sources need to be investigated and a range of options are presented in Section 2.3 of the GLOBE Action Plan for Coral Reefs. Of these, there is an urgent need for innovative financing mechanisms that can be mobilised in the short-term while other more long-term funding streams, such as adaptation funds, are brought on-line. Legislators are strongly urged to support the development of fast-financing mechanisms for action on coral reefs as well as the introduction of long-term comprehensive and appropriate financing schemes.

This document provides legislators and policymakers with clear and targeted legislative actions to build resilience in tropical shallow-water coral reef ecosystems and for the people that rely on them. The policy proposals have been developed by GLOBE and ZSL in close collaboration with a wide range of experts. The recommendations are based on the 'GLOBE Action Plan for Coral Reefs' which provides detailed information on the background and context of the coral reef crisis and a clear plan of action to enhance coral reef resilience over the next decade.

The policy proposals are arranged under five main goals:

- I. Sustainable Fisheries Management
- II. Marine Protected Areas Coverage and Effectiveness
- III. Watersheds and Water Quality Management
- IV. Management Capacity and Environmental Awareness
- V. Governance

The proposed measures on the following four pages address direct human pressures and their drivers as well as recommending ways to improve governance through increasing capacity, enforcement and environmental awareness. Sufficient and appropriate management is lacking in many coral reef nations. It is imperative to build capacity to implement the management interventions required. Long-term investment for integrated programmes that build and maintain adequate capacity to enable successful governance is critical.

The core Principles for Action that legislators must keep in mind as cornerstones for achieving success are summarized on the final page.

1. Sustainable Fisheries Management

Conduct all fishing and living resource extraction on coral reefs at biologically sustainable levels, based on clearly defined indicators and with regular monitoring of key target commercial species.

Redirect and phase out harmful subsidies which contribute to overcapacity and overfishing, referring to the GLOBE Marine Ecosystems Recovery Strategy Part 1: Fisheries (p. 5) for detailed analysis.

Pursue a comprehensive policy framework for sustainable management of reef fisheries, containing essential measures which:

- Implement the FAO Code of Conduct for Responsible Fisheries;
- Implement sustainable ecosystem-based fisheries management plans locally using community-based approaches and nationally following FAO guidelines;
- Ban all destructive fishing practices;
- Mandate stock assessments for key species, sustainable catch limits and fishing methods;
- Mandate the development of a National Action Plan for the recovery of threatened marine species;
- Provide sufficient capacity to effectively enforce all fisheries management measures.

Ensure national policy supports reef fish-dependent people, by:

- Pursuing policies that support local reef fish food security through market and trade measures, underpinned by social and ecological sustainability;
- Urging governments to conduct socio-economic analyses to: determine the value of reef fisheries and aquaculture to local economies and society, identify vulnerable groups, and understand the underlying drivers of overfishing;
- Introducing programmes to identify viable and appropriate options for sustainable livelihood activities in reef dependent regions and diversify livelihoods in these regions based on sustainable activities (both reef-based and other alternatives) supported through micro-finance and capacity building.

2. Marine Protected Areas Coverage and Effectiveness

At least 30% of the world's coral reefs should be effectively managed in no-take marine protected areas (MPAs).

MPA designation and implementation: Well-enforced protected areas can be very effective in reducing human impacts on coral reefs. A minimum of 30% protected area coverage for habitats is recommended to achieve ecosystem health. It is important to establish legislation mandating a target level of marine protected area coverage for coral reefs, which:

- Increases coverage of no-entry and no-take MPAs at the national level;
- Supports collaboration between existing regional coral reef initiatives to help meet MPA targets;
- Recognises the legitimacy of community-based marine protected areas and their management systems, and devolves sufficient authority for effective community co-management of resources;
- Requires that MPA networks protect biologically meaningful regions of known value to fisheries, conservation and communities, and integrate principles of resilience to climate change.

Urge governments to increase effectiveness of MPAs, particularly by:

- Encouraging implementation of existing MPA legislation, including for locally managed marine areas (LMMAs), and the conversion of marine 'paper parks' into effective MPAs that meet their management and broader ecological objectives;
- Scrutinising government implementation of MPAs to ensure legislation is understood and supported by user communities and stakeholders.

Ratify regional Conventions and Protocols concerning protected areas and protection of marine resources.

3. Watersheds and Water Quality Management

Implement comprehensive watershed and coastal water quality management plans that reduce pollution to safe levels for coral reefs. These should address all major pollutants, but with priority to those that cause eutrophication, have sub-lethal effects on corals (e.g. affect reproduction), lower seawater pH or have other negative impacts on coral reefs (including Persistent Organic Pollutants).

Comprehensive watershed management: Much of the water pollution affecting coral reefs originates from watersheds. Policies to address this pollution are often fragmented and incomplete. Legislators should introduce framework legislation establishing a comprehensive policy for watershed management which:

- Integrates and rationalises policy to address afforestation, runoff-reduction, sustainable agriculture methods, reduction of pesticide, herbicide, fertiliser and other agrochemical use;
- Maps natural and legal watershed boundaries and determines which nations, sectors or communities have legal jurisdiction over these areas;
- Establishes trans-boundary watershed management authorities.

Water quality policy: Land-based water pollution policies must be complemented by strong marine water quality targets and monitoring. Legislators should pursue comprehensive legislation mandating a reduction of all major pollutants in coral reef waters to at least half of 2010 levels by 2020, that:

- Is underpinned by the polluter pays principle;
- Establishes comprehensive national water quality monitoring programmes which identify the main sources of all pollutants on coral reefs;
- Mandates the establishment of best practice standards and compliance regulations for mariculture operations near coral reefs or in closely associated ecosystems (e.g. mangroves);
- Bans international shipping lanes within coral reef areas, in particular those areas of outstanding ecological value, and improves the monitoring of merchant vessels in national waters;
- Mandates the development and regular review of national management and emergency response strategies for large-scale marine pollution incidents such as oil leaks.

Coastal Zone Planning: Development in the coastal zone is also a key cause of coral reef degradation and water pollution. Legislation for sustainable coastal zone planning should integrate environmental priorities for water quality control and the regulation of building and industry into decision-making by both local and national planning authorities. Poorly planned coastal development conducted with little or no consideration of environmental impacts has caused significant damage and destruction to coral reef ecosystems. Coastal zone legislation must require Environmental Impact Assessments (EIAs) which are:

- Conducted for all coastal development with a full peer-review;
- Paid for by developers;
- Backed up by legislation to ensure the refusal, relocation, or sufficient damage mitigation for all development projects identified by EIAs to have a negative impact on coral reefs.

Ratify and adopt robust implementing legislation for the following agreements:

- Stockholm Convention on Persistent Organic Pollutants;
- Global Program of Action for the Protection of the Marine Environment from Land-based Activities (non-binding global agreement);
- International Convention for the Prevention of Marine Pollution from Ships (MARPOL);
- The IMO Ballast Water Convention (with support provided by the GloBallast Partnership);
- Regional Conventions and Protocols for protecting the marine environment from land-based pollution.

4. Management Capacity and Environmental Awareness

National capacity should be raised to effectively implement coral reef management, including improving environmental education and awareness levels for managers and stakeholders.

Increase national technical capacity. Conduct or update a National Capacity Self Assessment (NCSA) to determine the capacity increase required to achieve effective management, and pursue programmes which:

- Incentivise the uptake of degree-level training in multidisciplinary studies including ecosystem-based management, fisheries, marine and social sciences, followed by on-the-job training;
- Support the establishment of scholarships for both students and local stakeholders for a range of training courses on the marine environment and its sustainable management;
- Support participation in regional cross-visits for coral reef managers to share skills and experiences;
- Expand access to key coral reef management training literature, including existing training manuals and support efforts to translate these materials into national and local languages.

Increase national environmental awareness through both formal education systems and local awareness campaigns. Community-based management success requires local understanding and buy-in. Environmental awareness can generate support for coral reef protection measures. Approaches include:

- Encouraging the inclusion of coral reef conservation and sustainable ecosystem-based management into national curricula for all levels of the education system;
- Mandating the development and implementation of targeted education and awareness campaigns for both children and adults on how stakeholders can increase coral reef resilience locally.

Increase funding for national logistical capacity including *inter alia* monitoring and communication infrastructure and equipment, to meet national needs for increased management and enforcement and encourage regional cooperation to share logistical capacity where possible.

5. Governance

An integrated governance approach integrating climate, environment and development with coral reef ecosystem management should be implemented at the national and international level.

Integrated governance: The fragmented nature of legislation addressing coral reef conservation and management often results in ineffective governance. A policy framework for coral reef management should:

- Promote coherent and integrated governance approaches, nationally and regionally;
- Rationalise legislation and responsibilities for marine resource and MPA management between different sectors and levels of government, integrating coral reef management into existing national mechanisms such as National Adaptation Programmes of Action, National Biodiversity Strategies and Action Plans, and broader policies such as poverty reduction and sustainable development.

Governments should cooperate internationally to establish:

- Regional commissions to support management of trans-boundary coral reef ecosystems;
- National and regional reporting programmes for the exchange of coral reef data to encourage timely reporting to key global assessment processes supported by international conventions.

Stronger governance: Illegal and unregulated activity undermines management and contributes to coral reef degradation. Strong enforcement is required at each stage of the process (detection, arrest, prosecution and sanctions). Comprehensive legislation is needed in many places to increase enforcement and reduce illegal activities through effective penalties to deter infringements, but which also:

- Ensures full stakeholder involvement at the local level to ensure community support and ownership;
- Mandates international and regional cooperation on market-based measures to control trans-boundary movement of illegal fish products and coordinated monitoring and enforcement activities.

Devolved governance: Community-based marine resource management has been highly successful in many coastal areas, particularly in remote regions with low national government capacity. Where appropriate, parliaments should devolve marine resource management responsibility to local communities through a legislative framework for co-management agreements with local government and NGOs.

Principles for Action

- I. **Shallow-water tropical coral reefs should be granted protection from all harmful human impacts.**
- II. **Adaptation to the impacts of climate change on coral reefs should, wherever possible, adopt an ecosystems-based approach targeting the sustainable management, conservation and restoration of ecosystems to provide services which boost ecological and social resilience.**
- III. **All fishing and living resource extraction on coral reefs should be conducted at biologically sustainable levels, based on clearly defined indicators and with regular monitoring of key target commercial species.**
- IV. **30% of the world's coral reefs should be managed within no-take marine protected areas, of which one-third should be no-entry areas.**
- V. **National and regional watershed and coastal water quality management should reduce pollution to safe levels for coral reefs.**
- VI. **Effective coral reef management requires sufficient capacity including improved levels of environmental education and awareness across society and within parliaments.**
- VII. **Successful community-based management of coral reefs at the local level with full stakeholder involvement is key to improving ecological and social resilience and should be strongly supported.**
- VIII. **Policymaking for coral reef ecosystems should integrate climate, environment and sustainable development priorities and agreed goals.**
- IX. **National governments should join and actively participate in all relevant international and regional fora for coral reefs, particularly the International Coral Reef Initiative (ICRI) and the UNEP Regional Seas Programme.**
- X. **Parliaments should ratify and adopt robust implementing legislation for all international and regional conventions and protocols, including the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species (CITES) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).**
- XI. **Trans-boundary issues of coral reef management and conservation require strong inter-parliamentary and inter-governmental regional cooperation.**
- XII. **Securing long-term funding through multiple, diverse sources and transfer mechanisms is essential for effective implementation of the policy proposals.**