

## **Committee: Environment**

### **Question of: Coral Reefs**

### **Chair: Naomi Tilles**

#### **Introduction**

Coral reefs can be found all around the world. They protect coastlines from the damaging effects of wave action and tropical storms, as well as providing shelter to up to 2 million species of marine life. The largest coral reef is the Great Barrier reef in Australia, followed by the second largest found off the coast of Belize. Often called "rainforests of the sea", coral reefs are some of the most diverse ecosystems on Earth. They occupy less than a tenth of one percent of the ocean floor, but are home to more than 25 % of marine life.

Unfortunately, coral reefs are now under threat. Scientists have been researching reefs for years, and have discovered that global warming has had dramatic negative impacts on reefs. Higher ocean temperatures cause the coral to expel the algae living in its tissues, resulting in 'coral bleaching'. Corals can survive a bleaching event, but they are put under extreme stress and are subject to mortality. Destructive fishing practices, as well as pollution and coral mining have further damaged reefs. If this continues to happen, coral reefs could disappear forever.

#### **The Issue**

An estimated half a billion people rely on coral reefs for their food resources and income, and around 30 million of the world's poorest and most vulnerable people in coastal and island States are totally reliant on reef-based resources as their primary means of food production, sources of income and livelihoods. In Southeast Asia, more than 60% of 557 million people live within 60 km of the coast, and are linked to the resources of the coasts (Population Reference Bureau). The assessment survey in 2002 showed that the economic value of well managed coral reefs in the Southeast Asia was 12.7 billion USD. In general, well-managed reefs can yield between 5-15 tons of fish and seafood per square kilometre per year. Reef-associated fish species are an important source of protein and contribute about one-quarter of the total fish catch in developing countries. Coral reefs also attract tourists. More than 100 countries and territories benefit from tourism associated with reefs (United Nations World Tourism Organisation, 2010), and in twenty-three of these, reef tourism accounts for more than 15 percent of gross domestic product (GDP). Recently, many chemical compounds potentially for treatments of cancer, HIV, and other disease have been extracted from reef organisms. In addition to their biological value, reef structures can protect an estimated 150,000 km shoreline from the impact of storm waves and surges in more than 100 countries.

Roughly one-quarter of coral reefs worldwide are already considered damaged beyond repair, with another two-thirds under serious threat.

## Threats to Coral Reefs

Overfishing and destructive fishing practices: Unsustainable harvesting of fish or invertebrates, damaging fishing practices (use of explosives, poisons or destructive fishing gear), illegal, and unreported and unregulated fishing affect more than 55% of coral reefs. These have reduced the area of living corals and reduced species diversity and abundance. This threat will continue to increase due to population growth, excess fishing capacity, poor fisheries governance and management practices, international demand for fish and a lack of alternative income.

Coastal Development: Coastal engineering, run-off from land construction and clearing (sediment), dredging or land filling, direct construction on reef expanses (airports, etc.), and unsustainable tourism affect approximately 25% of reefs. These have resulted in increased algal cover/ overgrowth and reduced coral growth. The threat will continue to increase as population growth in coastal areas continues to outpace overall population growth.

Watershed-based pollution: Nutrient fertiliser, pesticides and chemical toxins, as well as eroded sediment are delivered by rivers to coastal waters and affect more than 25% of reefs. The run-off makes corals more susceptible to storms, diseases, and infestations; and causes coral bleaching which can result in 'dead zones' and ecosystem collapse. The threat will continue due to deforestation, climate change-induced increase in precipitation and an increase in the use of fertiliser, especially in South Asia and Africa, caused by the increased food demand of an increased global population.

Sedimentation: Erosion caused by construction (both along coasts and inland), mining, logging, and farming is leading to increased sediment in rivers. This ends up in the ocean, where it can 'smother' corals by depriving them of the light needed to survive. The destruction of mangrove forests, which normally trap large amounts of sediment, is exacerbating the problem.

Ocean acidification: Increased carbon dioxide emissions have caused a change in chemistry of ocean surface waters, causing a build-up of carbonic acid which affects 75% of coral reefs. This has resulted in a reduction of coral growth rates and a weakening of coral skeletons; and in extreme cases coral bleaching, halt of coral growth and the slow dissolution of reefs. By 2030, less than 50% of global coral reefs are expected to be in areas favourable for coral growth; and by 2050 this figure will fall to 15%.

Ocean warming: Rising sea temperatures affect more than 75% of coral reefs. This is resulting in mass coral bleaching and coral death. By 2030, 50% of global coral reefs are expected to experience thermal stress and coral bleaching; and by 2050 this figure will rise to 95%.

## Key Organisations

United Nations Environment Program: The UNEP established its own Coral Reef Unit (CRU) in 2000. Though its main responsibility is to coordinate the UNEP's work on coral reefs, it has also represented the UNEP in various international initiatives, such as the ICRI. The CRU itself offers policy support, capacity building and networking at both the national and regional level. The UNEP has also developed legislation and frameworks with the goal of setting guidelines for the international community in regards to tackling coral reef protection.

UNESCO: The UN Educational, Scientific and Cultural Organisation has listed many coral reefs as World Heritage Sites. In June 2017, UNESCO released a report on the Impacts of Climate Change on World Heritage Coral Reefs. <http://whc.unesco.org/en/news/1676/>

UN-Oceans: an inter-agency coordination mechanism on ocean and coastal issues, including coral reefs. Its role is to promote the coherence of United Nations system activities on oceans and coastal areas with the mandates of the General Assembly, the priorities contained in the Millennium Development Goals and the Johannesburg Plan of

Implementation and the mandates of governing bodies of all members of UN-Oceans, and to support the integrated management of oceans at the international level.

International Coral Reef Initiative (ICRI): a partnership among Governments, international organisations and non-governmental organisations, was launched in 1994 as the only global entity devoted solely to coral reef conservation. Its aim is to preserve coral reefs and related ecosystems by implementing relevant international conventions and agreements. At the same time, the Global Coral Reef Monitoring Network (GCRMN) was established as an operating unit of the Initiative, to assist in the development of coral reef monitoring and data management, with equal emphasis on ecological and socio-economic information, and to compile reports on the global status of coral reefs. The ICRI is not a UN body, but frequently works in conjunction with the UN.

Regional initiatives: including the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security; the Western Indian Ocean Coastal Challenge (WIO-CC); the Micronesia Challenge; the Caribbean Challenge; the Eastern Tropical Pacific Seascape project; the West Indian Ocean Partnership; the West African Conservation Challenge; and the Regional Initiative for the Conservation and Wise Use of Mangroves and Coral Reefs in the Americas.

## **Previous Attempts to Solve the Issue**

World Summit on Sustainable Development 2002: The Johannesburg Declaration adopted at the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, 2002, commits nations to sustainable development including through multilateral action. The Plan of Implementation calls for conservation and management of the oceans through actions at all levels, including by maintaining the productivity and biodiversity of important and vulnerable marine and coastal areas, developing human and institutional capacity and tools such as the ecosystem approach, and advancing the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). Paragraphs 32 d and e call for development of national, regional and international programmes for halting the loss of marine biodiversity, including in coral reefs, and for implementation of the programme of action called for by the International Coral Reef Initiative.

Rio+20 Earth Summit 2012: “The Future We Want”, the outcome document of the United Nations Conference on Sustainable Development (UNCSD) held in Rio de Janeiro in 2012, recognises that oceans, seas and coastal areas form an integrated and essential component of the Earth’s ecosystem. Coral reefs are specifically mentioned in paragraph 176: “the significant economic, social and environmental contributions of coral reefs, in particular to islands and other coastal States, as well as the significant vulnerability of coral reefs and mangroves to impacts including from climate change, ocean acidification, overfishing, destructive fishing practices and pollution” and supports “international cooperation with a view to conserving coral reef and mangrove ecosystems and realising their social, economic and environmental benefits as well as facilitating technical collaboration and voluntary information sharing.”

The importance of marine and coastal biodiversity, the threats of sea-level rise and coastal erosion, and the unique vulnerabilities of small island developing states (SIDS) are emphasised. Several paragraphs of the document give added impetus to UNEP’s coral reef work, including e.g. Paragraphs 71 which encourages existing and new Green Economy partnerships; 97, which acknowledges the regional dimension of sustainable development; and 100, which welcomes regional and cross-regional initiatives. Paragraphs 4, 138, 166, 197, 280 recognise the importance of building ecosystem resilience in the face of climate change and ocean acidification, and to enhance the resilience of marine dependent communities and support disaster risk reduction.

The Ocean Conference 2017: a United Nations conference that took place on June 5th-9th 2017 which sought to mobilise action for the conservation and sustainable use of the oceans, seas and marine resources

General Assembly resolutions: resolution 61/105 (8 December 2006) on sustainable fisheries, resolution 63/214 on the sustainable development of the Caribbean Sea for present and future generations (19 December 2008) and resolution 64/73 (7 December 2009) on the protection of global climate for present and future generations of humankind, and resolution 65/150 on protection of coral reefs for sustainable livelihoods and development.

## **Possible Solutions**

- Establishment of new marine protected areas (MPAs), and better management of existing MPAs
- Increased and better enforced fishing regulations in coral reef areas
- Restrictions on harmful fertilisers/ methods to prevent chemical run-off
- Limitation of greenhouse gas emissions
- Consideration of effects on reefs in nations policy decisions and coastal development planning
- Education campaigns, especially in the small island nations most affected by reef degradation and in the communities who depend on reefs for their livelihoods
- The development of guidelines/ legislation guidance on the protection of coral reefs for Member Nations

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