

The Groningen Model United Nations 2017

United Nations Environment Programme



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Coral Reef Protection

By: Muhammad Arkandityo & Erica Duffy

Welcome Letter

Honorable Delegates,

We would like to welcome you to the United Nations Environment Programme (UNEP) for GrunnMUN 2017!

Our names are Arkan and Erica and we will be your chairs for the day at this year's conference. We are really looking forward to hearing about all of your concerns and ideas regarding the protection of coral reefs around the world.

The United Nations Environment Program (UNEP) is the leading international body on environmental issues. Its responsibilities include setting the global environmental agenda, promoting the coherent implementation of the environmental dimension of sustainable development within the UN and serving as an authority advocate for global environmental issues. With the majority of the world's scientist agreeing on the fact that climate change is caused by human activity, the role of the UNEP is more vital now than ever.

To those of you who are MUN veterans, we hope that you can bring your experience and knowledge to the debate and lead the way for coming to a resolution. To those of you for whom this is your first MUN experience, fear not! We will be here to help you at every stage, and we welcome you to contact us before the conference with any questions or to help with any hesitations.

We wish you all the best of luck in your preparations and are looking forward to meeting you all this March!

Best regards,

Your UNEP Chairs

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Introduction

The coral reef ecosystem, besides being a beautiful underwater sight to behold, is also a bastion of marine biodiversity. While coral reefs only occupy an estimate of 284,000 km² or less than 0,1% of the total ocean surface area¹, they are home to more than 9 million species or at least 25% of all marine creatures.² The coral reef ecosystem not only houses these species, but also provides oxygen and minerals and acts as an energy source for the whole marine food chain.

The uniqueness and wealth of coral reefs also serves as a lifeline to the over 275 million people worldwide who live within 40 kilometres of them.³ A square kilometre of healthy coral reef on average yields 15 tonnes of fish and seafood products annually.⁴ Furthermore, the exploitation of coral reefs has diversified in recent years. Coral related activities, ranging from coral mining for the extraction of valuable minerals to attracting large amounts of tourism, provide valuable economic opportunities, and together generate revenue of up to USD 29.8 billion annually.⁵ Unfortunately, these methods of exploitation far outpace the reefs' long cycles of growth, with some corals dating back ten thousand years. An estimate of 27% of coral reef has already been lost and with the current rates of destruction continuing, we risk losing 60% of the total coral reef in the world within 30 years.⁶

States have implemented various measures to combat this, the oldest and most important being the establishment of Marine Protected Areas (MPAs). These areas are designated to be protected by the government, in order to prevent the destruction of marine lives and to manage extraction practices. From only around 430 MPAs in 1985, most coastal countries had imposed at least one MPA within their territory today by the end of the 1990s.⁷ On the international sphere, however, the protection of coral reefs is a rather young field. The United Nations Convention on the Law of the Seas (UNCLOS) concluded in 1982, which also includes provisions on the conservation and sustainable use of marine biodiversity,

¹ Kaiser, Michel & Martin J. Attrill. *Marine Ecology: Processes, Systems and Impacts*. Oxford: Oxford University Press, 2011.

² World Wide Fund for Nature. "Coral Reefs" .

http://wwf.panda.org/about_our_earth/blue_planet/coasts/coral_reefs/

³ Burke, Laretta et al. *Reefs at Risk Revisited*. Washington: World Resources Institute, 2011

⁴ International Union for Conservation of Nature. "Coral Reefs – Facts and Figures".

<https://www.iucn.org/content/coral-reefs-facts-and-figures>

⁵ Center for Applied Biodiversity Science. *Economic Values of Coral Reefs, Mangroves, and Seagrasses: A Global Compilation*. Arlington: Conservation International, 2008.

⁶ Cesar, Herman et al. *The Economics of Worldwide Coral Reef Degradation*. Arnhem: CEEC , 2003.

⁷ "History of Marine Protected Areas", environmentservices.com

http://www.environmentservices.com/projects/programs/RedSeaCD/DATA/Module07/M07_history.html

was the first international legal framework regulating marine activities.⁸ One decade later, the Earth Summit of 1992 in Rio de Janeiro resulted in the Convention on Biological Diversity (CBD).⁹ Subsequently, international collaboration between governments started to emerge with the goal of sharing research and best practices as well as raising global awareness for coral reef issues. Amongst others, this took place within the International Coral Reef Initiative (ICRI) in 1994, which was initiated by 8 states whose membership now reaches 74 member countries and organizations.¹⁰ Moreover, regional co-operations have also emerged. These include the South-Western Indian Ocean Islands Reef Network on the African East Coast¹¹ and the Coral Triangle Initiative (CTI) in Southeast Asia.¹²

Current Challenges

Overfishing

Historical data supports the claim that ecological extinction caused by overfishing precedes all other pervasive human activity in relation to coral reef disturbances.¹³ From observing the long-term human impact on marine biodiversity, it is possible to gain insight into the nature and extent of degraded ecosystems. Biodiversity in coral reefs is dependent essentially on the ecological balance. Overfishing has provided for a major disturbance in this balance, thus ensuring the deterioration of coastal reefs. For example, in the Great Barrier Reef a recent mass mortality of coral reef due to outbreaks of a species of starfish *Acanthaster planci* has been observed. The outbreak of the species is almost certainly due to the overfishing of larger predatory sea life which disrupted the food chain and has led to an abundance of starfish which feeds on the coral, destroying it. The outbreak of the starfish is a relatively new phenomenon, as there is no fossil evidence of populations of this number.¹⁴ This is but one example of how fragile the balance of marine life actually is.

In response to this, there have been attempts to promote sustainable fishing practices within native communities. The practices include an increase in the use of

⁸ United Nations Conventions on the Law of the Sea. *UNCLOS at 30*. New York: United Nations, 2012.

⁹ Convention on Biological Diversity. "*History of the Convention*" <https://www.cbd.int/history/>

¹⁰ International Coral Reef Initiative. "*Current Members*" <http://www.icriforum.org/members/icri-members>

¹¹ Indian Ocean Commission. "*Regional Reef Network*" http://commissionoceanindien.org/fileadmin/resources/Biodiversite/activities/WIOMSA/Depliant_recif_VA.pdf

¹² Coral Triangle Initiative. Home page. <http://www.coraltriangleinitiative.org/>

¹³ Hughes et al. "*Climate Change, Human Impacts, and the Resilience of Coral Reefs*" <http://science.sciencemag.org/content/301/5635/929.full>

¹⁴ Ibid

communal fisheries management systems, such as co-management, that provide fishers and local communities with a greater stake in the long-term health of fish stocks. This is combined with the elimination, phasing out, or reform of subsidies that contribute to excess fishing capacity, thereby phasing out destructive fishing practices and further developing marine protected area networks.¹⁵

Coastal Development Pollution

Over 25% of coral reefs are endangered by coastal development.¹⁶ Building on the coast results in large increases in sediment being pushed into the seas, thus blocking the sunlight from reaching the coral and rendering the coral unable to photosynthesize.¹⁷ Currently 40% of the world's population live within 100km of coral reefs,¹⁸ adding increased pressure to their ecosystems. Furthermore, many island and coastal nations which support coral reefs are dependent on the tourism industry to sustain their economy; an industry which in turn is also dependent on the coral. However, the growth of the tourism industry has led to an increase in coastal development, such as the construction of hotels and airports. Hence, it is of paramount importance to try to balance these conflicting interests.

In the same way, other man-made causes of pollution have a similar effect. With growing populations in coastal regions comes a shift in the landscape, causing run-off which leaves sediment in the oceans and seas. This leads to poor water quality, which again, leads to decreased oxygen. Furthermore, pollution can lead to enhanced algal growth which overcrowds the ecosystem and significantly degrades it. Pesticides which enter the water from the surrounding land also interfere with coral reproduction and growth. Finally, sewage discharge has been found to introduce pathogens into coral reef ecosystems.¹⁹

Climate Change

One of the many impacts of climate change on the coral reef ecosystem can be found in coral bleaching, which occurs when water temperatures rise. In the process, corals expel the algae *zooxanthellae*, which are corals' main source of food, from their tissues and turn completely white.²⁰ Other causes of coral bleaching include pollution, overexposure to sunlight and extreme low tides in coral

¹⁵ Jackson et al. "*Historical Overfishing and the Recent Collapse of Coastal Ecosystems*" <http://science.sciencemag.org/content/293/5530/629.full>

¹⁶ Reef resilience. "*Coastal development*" <http://www.reefresilience.org/coral-reefs/stressors/local-stressors/coastal-development/>

¹⁷ Teach Ocean Science "*How does climate change effect coral reefs?*" http://www.teachoceanscience.net/teaching_resources/education_modules/coral_reefs_and_climate_change/how_does_climate_change_affect_coral_reefs/

¹⁸ Burke, L., K. Reytar, M. Spalding, and A. Perry "*Reefs at Risk Revisited.*" 115

¹⁹ Roger "*Responses of coral reefs and reef organisms to sedimentation*" Marine Ecology Progress Series.

²⁰ D.W. Souter Ocean and Coastal Management '*The health and future of coral reef systems*', 43

areas. While there is evidence to suggest that corals can recover from bleaching, it is unsure to what extent this holds true. In some cases, the reefs recover by being recolonized by *zooxanthellae*, or are taken over by thick layers of macro algae.²¹ However, recovery has been shown to be limited and generally only responsive to short-term damage.

Furthermore, one of the biggest dangers in environmental science is the rise in CO₂ levels globally, and this is even more prevalent in our oceans and seas. Oceans have absorbed around one third of man-made CO₂ from the atmosphere since 1800, and around one half of CO₂ released from fossil fuels. The oceans are roughly now 30% more acidic than they were in 1751.²² The impact on corals is devastating, as the coral cannot absorb calcium carbonate, which it uses to make its skeleton, when there is too much acidity in the ocean. If CO₂ levels continue to rise at the current rate, by 2100 corals all over the world will begin to dissolve.²³

The Role of the United Nations

Since the Rio Summit in 1992, and the formation of the UNEP's Coral Reef Unit (CRU) in 2000, aspirations for coral reef protection have continuously grown and have garnered increasing international support. The Aichi Biodiversity Targets.²⁴ 2020, one of the Convention on Biological Diversity's main frameworks, even specifically addresses the coral reef ecosystem in target 10:

"By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimised, so as to maintain their integrity and functioning"

The Aichi Biodiversity Targets were agreed upon in 2010, and aimed to be achieved by 2020. However, target 10 is an exception, as the protection of coral reefs is a time sensitive issue. While issues such as overall global CO₂ reduction and ocean acidification are long-term targets, there is a lot that can be done in the short term to reduce the impact of coral destruction. Such measures include local reef management related to overfishing and pollution. In 2014 the UN Biodiversity Report was released, which highlighted the failure to meet the targets. On page 50 of the report, when discussing target 10, the report stated that "the one target within this goal with a deadline of 2015, reducing multiple pressures on coral reefs,

²¹ Ibid

²² National Ocean Service "What is Coral Bleaching?"

http://oceanservice.noaa.gov/facts/coral_bleach.html

²³ Folke et al. "Regime Shifts, Resilience, and Biodiversity in Ecosystem Management"

<http://www.annualreviews.org/doi/10.1146/annurev.ecolsys.35.021103.105711>

²⁴ Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets

<https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf>

is certain to be missed".²⁵

The United Nations as an international body itself has also recognised the increasing urgency of coral reef protection. Such moves can be seen through resolutions in the past 10 years that specifically brought coral reef protection to the spotlight. These include General Assembly (UNGA) resolutions 65/150 (2010) on the protection of coral reefs for sustainable livelihoods and development, UNGA Resolution 61/105 (2006) on sustainable fisheries, and UNGA Resolution 64/73 (2009) on the protection of the global climate for present and future generations.

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. In this matter it is involved with various regional-level initiatives like the CTI. The UNEP as a whole, has also developed legislation and frameworks with the goal of setting guidelines for the international community in regards to tackling coral reef protection.

In cooperation with the World Bank and the United Nations Development Programme (UNDP), UNEP is also involved in guiding and monitoring projects related to the Global Environment Fund (GEF). In such UNEP-GEF projects, UNEP works together with local authorities from the application process all the way to the implementation stage. In regards to coral reef protection, these projects have been implemented in all major coral reef habitat areas in the world.

Conclusion

The deterioration of coral reefs is a time-sensitive issue. Even though progress has been made both at the local and international level in the past two decades, the problem cannot be tackled through governmental intervention alone. From the designation of Marine Protected Areas to regional coral initiatives, focus has been geared towards legislation and institutional collaborations. The two main challenges which coral reefs face, overfishing and coastal pollution/development, are spurred by an evolving world that demands large-scale profits and falls short in properly considering the consequences of its actions. Law enforcement and local initiatives remain channels for solutions. While the enforcement lacks firepower in the face of big industries, the latter remain sporadic and uncoordinated, thereby minimizing their potential effect. Delegates will be faced with the challenge of how to coordinate and utilise these two approaches to better protect the coral reef ecosystem.

²⁵ Ibid

Questions a Resolution Must Answer (QARMAs)

1. What measures should the international community take to protect coral reefs, particularly in regards to law enforcement on overfishing and pollution?
2. How can the UNEP contribute to better coordinate global coral reef protection? In what ways can it promote more exchange between the existing regional initiatives (Southeast Asia's CTI, Caribbean Islands, Southwest Indian Ocean islands)?
3. What can the UNEP do to support local initiatives in collaborating with bigger government plans (MPAs, etc.), while taking into account the preservation of local culture and the economy?

Further Reading

http://www.un.org/depts/los/biodiversityworkinggroup/webpage_legal%20and%20policy.pdf

UN Resolution A/C.2/65/L.28/Rev.1 on Protection of coral reefs for sustainable livelihoods and development - <https://documents-dds-ny.un.org/doc/UNDOC/LTD/N10/650/84/PDF/N1065084.pdf?OpenElement>

History of Marine Protected Areas, World Aquarium <http://www.cfto.org/wp-content/uploads/2012/11/HISTORY-OF-MARINE-PROTECTED-AREAS.pdf>

Report of the Secretary General:
http://www.un.org/esa/dsd/resources/res_pdfs/ga-66/SG%20report_Coral%20Reefs.pdf -

UNEP/EA.2/L.13/Rev.1 - Sustainable Coral Reef Management

UNEP/DEPI/CR.1/ 3 Report from UNEA-2 with particular attention to coral reefs; See in detail Annex 3 2/12 Sustainable coral reefs management; Annex 4 UNEA-2 Side Event: Coral Reefs in the 2030 Development Agency Agenda: Safeguarding the health and resilience of half a billion reef-dependent people.

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