

IDENTIFYING THE LEGAL AND REGULATORY CHALLENGES IN INDIA TO PREVENT ILLEGAL AND UNREGULATED TRADE OF CORALS

John J Vachaparambil

15 October 2022

Keywords: CORALS, BIOLOGICAL DIVERSITY, WILDLIFE PROTECTION, CITES, ILLEGAL TRADE

In May of 2022, two aquarium hobbyists from New Town and Kasba (Kolkata) were arrested by forest officials and placed under judicial custody for a week, for decorating their fish tanks with live corals. A marine species protected under Schedule I of the Wildlife (Protection) Act, 1972, corals are also banned by the Central Government from being kept in one's home. These coral species, identified as reef-building corals, which are found in the Lakshadweep as well as in the Andaman and Nicobar Islands, are highly priced in the global market.¹ This incident is not the first of its kind. Earlier in 2019, the Wildlife Crime Control Bureau (WCCB) and the Maharashtra Forest Department arrested two men from Jalna (Maharashtra) for illegal possession of 930 pieces of coral, which were later identified as black coral (*Antipatharians*) of Gorgonian type, valued at around Rs 50,000. The accused had brought the protected marine species, found along the Gulf of Mannar and island chains of Lakshadweep, and Andaman and Nicobar, to the Mumbai Metropolitan Region (MMR) for sale.²

Coral reefs are often referred-to as the 'rainforests of the oceans', highlighting the fact that these ecosystems play a significant role in the marine environment, similar to terrestrial rainforests. They not only act as natural carbon sinks,³ but also provide habitat for a plethora of marine biological

¹ Tamaghna Banerjee, "2 arrested for keeping live corals in fish tanks", 03 May 2022, <https://timesofindia.indiatimes.com/city/kolkata/2-arrested-for-keeping-live-corals-in-fish-tanks/articleshow/91272867.cms>.

² Badri Chatterjee, "930 pieces of 'black corals' worth ₹50-K seized from MMR, 2 held", 18 November 2019, *Hindustan Times*, <https://www.hindustantimes.com/mumbai-news/930-pieces-of-black-corals-worth-50-k-seized-from-mm-2-held/story-7akPUxutgyNZH6i2Iv9S0H.html>.

³ D W Kinsey & D Hopley, "The significance of coral reefs as global carbon sinks-response to Greenhouse", 20 May 1990, *Palaeogeography, Palaeoclimatology, Palaeoecology (Palaeo)*, Vol 89, Issue 4, [https://doi.org/10.1016/0031-0182\(91\)90172-N](https://doi.org/10.1016/0031-0182(91)90172-N).

diversity, protection to coastal communities from natural disasters,⁴ sand for beaches, income for the fishing communities and local businesses, including additional revenue to the national economy from coral tourism.⁵ Further, these reefs aid in the delimitation of maritime boundaries of islands situated on atolls or of islands having fringing reefs,⁶ and provide raw materials for developing life-saving medicines,⁷ as well as lime that is used in construction.⁸

The significance of corals and coral reefs, combined with an increase in global demand for certain species of coral for use in aquariums, jewellery, etc., has led to further destruction of these fragile marine ecosystems, which are already under threat from anthropogenic activities. The fact that the global trade of coral is permitted under international law is worsening the situation, especially for coastal States such as India, where there is a complete ban on the trade of corals, including species found in the four prominent coral reef areas. Being a member of various international and regional coral conservation forums and with the recent discovery of four new coral reef species in the waters of the Andaman and Nicobar Islands, the need-of-the-hour is to identify the legal and regulatory gaps and provide relevant policy recommendations to the Government of India to prevent illegal trade, and to conserve and protect coral reef ecosystems. This article seeks to be a step in that direction.

International Coral Trade and India

The international trade of hard corals, which has existed since the 1950s,⁹ and trade involving other species of corals, are now regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which entered into force on 01 July 1973. Certain species, including the corals mentioned in Appendix II of the Convention, are not currently threatened by extinction, and so, the trade involving such species is permitted, albeit under certain regulations.

⁴ National Ocean Service, “How do coral reefs protect lives and property”, 26 February 2021, https://oceanservice.noaa.gov/facts/coral_protect.html#:~:text=Corals%20form%20barriers%20to%20protect,%2C%20property%20damage%2C%20and%20erosion.&text=Several%20million%20people%20live%20in,to%20or%20near%20coral%20reefs.

⁵ Mark Spalding, et.al “Mapping the global value and distribution of coral reef tourism”, 2017, *Marine Policy*, https://www.nature.org/content/dam/tnc/nature/en/documents/paper_coralreeftourism_spalding_2017.pdf.
Also see: The Nature Conservancy, “How tourism can be good for coral reefs”, 25 April 2017, <https://www.nature.org/en-us/what-we-do/our-insights/perspectives/how-tourism-can-be-good-for-coral-reefs/>.

⁶ Article 6, The United Nations Convention on the Law of the Sea (UNCLOS), 1982, https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

⁷ Carrie Manfrino, “Can we save coral reefs?”, May 2017, *UN Chronicle*, Nos 1 & 2, Vol LIV, <https://www.un.org/en/chronicle/article/can-we-save-coral-reefs#:~:text=Reef%20structures%20protect%20coastal%20communities,twenty%2Dfirst%20century%27s%20medicin e%20cabinet>.

⁸ Sriyanie Miththapala, “Coral Reefs”, 2008, *IUCN*, Coastal Ecosystem Series, Vol 1, <https://portals.iucn.org/library/sites/library/files/documents/CES-001.pdf>.

⁹ Elizabeth Wood, et.al “International trade in hard corals: review of management, sustainability and trends”, 09-13 July 2012, *Proceedings of the 12th International Coral Reef Symposium*, 19C Trade in coral reef wildlife, https://www.icrs2012.com/proceedings/manuscripts/ICRS2012_19C_1.pdf.

This relaxation under international law has led to a substantial increase in the types of coral being traded globally (refer **Table 1**).¹⁰

Types of Coral Being Traded			
Hard Coral	Coral	Outlet/Product	
Hard Coral	Wide Range of reef-building or reef-associated species from the order <i>Scleractinia</i> (Class <i>Zooantharia</i>), with a few species from the Classes <i>Hydrozoa</i> (Order <i>Athecata</i>) and <i>Alcyonaria</i> (Orders <i>Coenothecalia</i> and <i>Stolonifera</i>)	Collected by hand via snorkelling or scuba diving	
		Used whole or cut into blocks for building	
		Crushed or broken for use as Aggregate (e.g., in road construction)	
		Broken and fired for production of lime	
		Cleaned, dried, and sold intact as curios and display items	
		<i>Cirrhipathes</i> spp. and <i>Antipathes</i> spp. from the Order <i>Antipatharia</i> (Class <i>Ceriantipatabria</i>)	Live for aquaria
		Collected by hand via scuba diving	
		Skeleton made into jewellery and curios	
Semi-Precious (Black Coral)	Mostly <i>Corallium</i> spp. from the Class <i>Alcyonaria</i> (Order <i>Gorgonacea</i>)	Collected mainly via dredges, ROVs, and by divers	
Precious Coral		Skeleton made into fine jewellery and carvings, as also in traditional medicine	

Table 1: Type of Coral Traded

Source: Fahmeeda Hanfee, “Trade in Corals”, Regional Workshop on the Conservation and Sustainable Management of Coral Reefs

<https://www.fao.org/3/X5627E/x5627e0r.htm#21%20trade%20in%20corals%20by%20fahmeeda%20hanfee1>

Prominent coral formations along the Gulf of Kachchh, the Lakshadweep Islands, the Gulf of Mannar, and the Andaman and Nicobar Islands, and marginal formations along the western coast of India, have enabled individuals to actively participate in the international coral trade (both import and export).¹¹ It is estimated that India has been one of the largest suppliers of coral and other similar reef organisms to the US at least since 1975, with over 100 tonnes of coral being exported to the US during the period 1985-86. Available data also suggest that, over the years, there has been a substantial increase in the commercial exploitation of sea fans (*Gorgonids*) in India to meet the demand for the ‘wonder drug’ extracted from these organisms, which is being exported in massive quantities to countries such as France, Germany, Belgium, the USA and the Netherlands.¹² In 2020, the value of exports of Commodity Group 0508, i.e., “corals and similar materials, unworked or simply prepared but not otherwise worked; shells of molluscs, crustaceans or echinoderms and cuttle-bone, unworked or simply prepared but not cut to shape, powder and waste thereof” from India was estimated to be \$4.7 million, an increase in 14 per cent when compared to the total volume exported in 2019, which itself was

¹⁰ The Coral Reef Alliance (CORAL), “Coral reef mining, harvesting and trade”, <https://coral.org/wp-content/uploads/2014/02/coralmining.pdf>.

¹¹ Jyoti Saroj, et.al “review of coral reefs of India: Distribution, status, research and management”, October 2016, https://www.researchgate.net/publication/309321836_REVIEW_OF_CORAL_REEFS_OF_INDIA_DISTRIBUTION_STATUS_RESEARCH_AND_MANAGEMENT.

¹² Fahmeeda Hanfee, “Trade in Corals”, *Regional Workshop on the Conservation and Sustainable Management of Coral Reefs*, <https://www.fao.org/3/X5627E/x5627e00.htm#Contents>.

estimated to be \$3.31 million. Also, as the export of Commodity Group 0508 to the top destinations (refer **Chart 1**) increased in 2020, the import decreased by 49 per cent, i.e., from \$4.87 million in 2019 to \$2.45 million in 2020.¹³

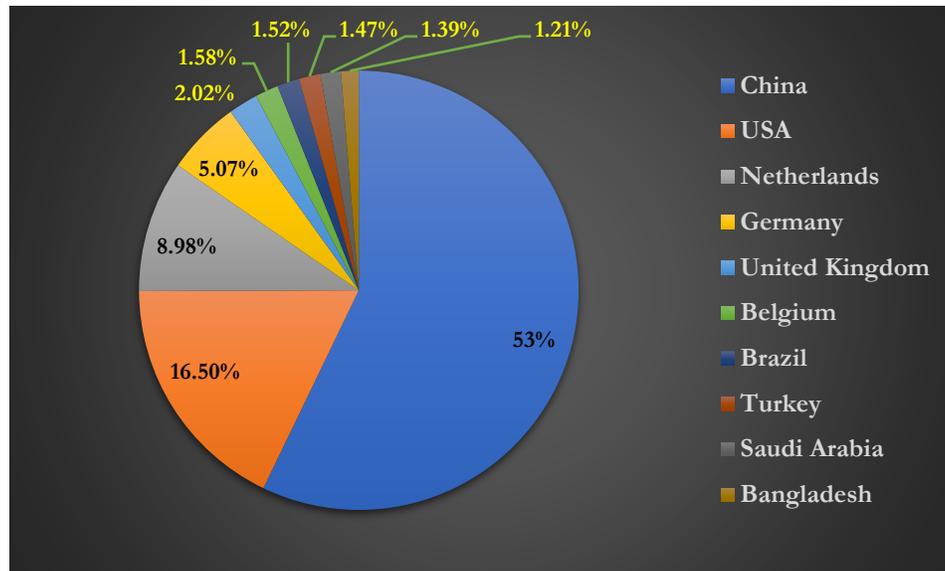


Chart 1: Top Export Destination of Commodity Group 0508

Source: Trend Economy

<https://trendeconomy.com/data/h2/India/0508>

Protection and Conservation – International Laws and Regulations

Although the 1973 Convention (CITES) allows for the trade of corals, the law specifies that if the trade is not closely monitored and controlled, species including corals mentioned in Appendix II might become threatened with extinction. To prevent corals from becoming extinct, the Convention require member States to (i) restrict the trade of listed species in accordance with the regulations laid down, (ii) implement necessary measures to enforce the provisions, (iii) prohibit and penalise the traders for violation of the regulations, and (iv) confiscate illegally traded specimens.

¹³ Annual International Trade Statistics by Country (HS02), *Trend Economy*, <https://trendeconomy.com/data/h2/India/0508>.

Commodity Group 0508 classification is mentioned under Chapter 5 titled ‘Products of Animal Origin, not elsewhere specified or included ITC HS Code Classification’, HS Classification Codes in Handbook of Procedure.

The **HS Code** (Harmonised Code) is a standardized numerical method to classify export trade products by customs authorities around the world.

Also see: World Customs Organisation, “HS Classification Handbook”, November 2013, http://harmonizedsystem.wcoomdpublishings.org/pdfs/WCOOMD_MSH_EN.pdf.

The Convention also mandates the need to obtain necessary permits and requires the establishment of national authorities that would monitor such trade.¹⁴

The United Nations Convention on the Law of the Sea (UNCLOS), 1982, stipulates that in addition to the general obligation of member States to protect and preserve the marine environment,¹⁵ they are required to take measures required to protect and preserve rare or fragile ecosystems as well as the habitats of depleted, threatened, or endangered species and other forms of marine life.¹⁶

The Convention on Biological Diversity (CBD), 1992, mentions that there should be ‘sustainable use’ of the components of biological diversity, i.e., the use in such manner and rate as would not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.¹⁷ As per the Convention, ‘**biological diversity**’ refers to the variability among living organisms from all sources, *inter alia*, terrestrial, marine, and other aquatic ecosystems, as also the ecological complexes of which they are part; this also includes diversity within species, between species, and of ecosystems.¹⁸ Coral forms an integral part of marine biological diversity.

In 2012, the UN General Assembly adopted Resolution A/RES/66/288 after recognising: **(i)** the significant economic, social, and environmental contributions of coral reefs in particular to Small Island Developing States (SIDS) as well as coastal States, and **(ii)** the threats to coral reefs from overfishing, destructive fishing practices, etc. The Resolution also highlighted the unanimity amongst member States in supporting and encouraging international cooperation for conserving coral reefs and other marine and coastal ecosystems.¹⁹

In the 2017 **UN Ocean Conference**, member States adopted the **Sustainable Development Goal (SDG) 14** on the conservation and sustainable use of the ocean, seas and marine resources, and also released the ‘Coral Reef Life Declaration’.²⁰ Considering the probable impact of the destruction of coral reefs on the economy of SIDS, the declaration aims at: **(i)** developing environmentally sustainable business models, and **(ii)** engaging the business community in reducing the impact on coral reefs.²¹

¹⁴ Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), “Different degrees of protection”, https://cites.org/sites/default/files/I/Brochure_UNEP_CITES_eng.pdf.

¹⁵ *Ibid* 6, Article 192, UNCLOS.

¹⁶ *Ibid*, Article 194(5), UNCLOS.

¹⁷ Article 2, Convention on Biological Diversity, 1992, <https://www.cbd.int/doc/legal/cbd-en.pdf>.

¹⁸ *Ibid*.

¹⁹ United Nations General Assembly, “Resolution A/RES/66/288 – The Future We Want”, July 2012, https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_66_288.pdf.

²⁰ ICRI Forum, “Coral Reef Life Declaration”, <https://icriforum.org/wp-content/uploads/2020/05/CORAL-REEF-LIFE-Declaration.pdf>.

²¹ *Ibid*.

The World Trade Organization (WTO) Secretariat, through its 2021 “Matrix on Trade-related Measures pursuant to Selected Multilateral Environmental Agreements” (MEAs), mention that matters regarding permits and certificates for trade in coral specimens should be directed to: **(i)** the Animals Committee (FAO) to analyse the outcomes of the precious coral survey, and **(ii)** the FAO, to prepare recommendations to enhance conservation and sustainable use of corals for international trade.²²

Conservation and Protection in India – Laws and Regulations

The duty to protect the environment derived from the Constitution of India, specifies that: **(i)** it is the duty of the State to protect and improve the environment and to safeguard the forests and wildlife of the country,²³ and **(ii)** it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures.²⁴

To prevent illegal trade and to protect and conserve corals, the Ministry of Environment, Forest, and Climate Change (MoEFCC), vide its Notification of 11 July 2001, added ‘corals’ to Schedule I, Part IVA, of the Wildlife (Protection) Act, 1972.²⁵ This addition has now caused the imposition of a complete ban on the trade of coral, as Schedule I consists of those species that are endangered and require protection from poaching, killing, trading, etc. Similarly, even though the Customs Act of 1962 does not specifically mention corals, the Act defines the term “prohibited goods” as those “goods the import or export of which is subject to any prohibition under this Act or under any other law.”²⁶ In addition, under the Environment (Protection) Act, 1986, the Central Government has the power to take measures to protect the environment, including the creation of such areas where the operation of industries is restricted.²⁷ The Coastal Regulation Zone (CRZ) Notification of 1991 prohibits the construction of new buildings within 200 metres of coral reefs, and also dredging and underwater blasting in and around coral reef formations, specifically along the island chains of the Andaman and Nicobar, and Lakshadweep.²⁸ With the aim of protecting and conserving critical ecological systems

²² World Trade Organisation, “Matrix on Trade-related Measures pursuant to selected Multilateral Environmental Agreements”, 19 March 2021,

<https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/CTE/W160R9.pdf&Open=True>.

²³ Article 48A, The Constitution of India.

²⁴ Article 51A(g), The Constitution of India.

²⁵ The Wildlife (Protection) Act, 1972,

[http://nbaindia.org/uploaded/Biodiversityindia/Legal/15.%20Wildlife%20\(Protection\)%20Act,%201972.pdf](http://nbaindia.org/uploaded/Biodiversityindia/Legal/15.%20Wildlife%20(Protection)%20Act,%201972.pdf).

Also see: Ministry of Environment and Forests, “Notification”, 11 July 2001,

<https://parivesh.nic.in/writereaddata/MINISTRY%20OF%20ENVIRONMENT%20AND%20FORESTS%20SO665E.pdf>.

²⁶ Section 2(33), Customs Act, 1962, <https://www.cbic.gov.in/htdocs-cbec/customs/cs-act/cs-act-ch1-revised3>.

²⁷ Section 3(2)(v), The Environment (Protection) Act, 1986,

https://www.indiacode.nic.in/bitstream/123456789/4316/1/ep_act_1986.pdf.

²⁸ Ministry of Environment and Forests, “CRZ Notification”, 1991,

<https://parivesh.nic.in/writereaddata/ENV/crz75.PDF>.

and resources,²⁹ the 2006 National Environmental Policy defines “eco-sensitive zones” as areas or zones with identified environmental resources having incomparable values which require special attention for their conservation because of the landscape, wildlife, biodiversity, historical, and natural values.³⁰ Also, the Environmental Impact Assessment (EIA) Notification of 2006 mandates the procurement of ‘prior environmental clearance’ (prior-EC) for activities that involve the extraction of natural resources using pipelines passing through national parks, sanctuaries, coral reefs, and ecologically sensitive areas.³¹

Considered as part of marine biological diversity, the definition of the term “fish” under the Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981 also includes coral and so, the illegal and unregulated trade in coral could be classified as an act that is part and parcel of [illegal, unreported, and unregulated \(IUU\) fishing](#). To ensure sustainability, the Biological Diversity Act of 2002 also highlights the need to undertake “*sustainable use*” of biological resources.³²

Protection of Coral Reefs – India’s Role

India ratified the 1973 CITES on 18 October 1976 (ISO 3166-2 Code) and was also elected as a member of the Standing Committee for three consecutive terms, from 1981 to 1987.³³

At the international level, India is a member of the International Coral Reef Initiative (ICRI), a global partnership for the preservation of the world’s coral reefs and associated ecosystems.³⁴ The ICRI, during its General Meeting held in Monaco (12-15 January 2010), put forth the “ICRI Recommendations on International Trade in Coral Reef Species and Related Products”, which was approved by its members. The recommendations, taking into consideration the impact of unsustainable extraction of both live and dead corals, requested parties to the CITES to adopt measures (amongst others) to improve the conservation and management of corals, coral reefs, and coral reef species.³⁵

²⁹ Ministry of Environment and Forests, “National Environmental Policy (NEP)”, 2006, https://ibkp.dbtindia.gov.in/DBT_Content_Test/CMS/Guidelines/20190411103521431_National%20Environment%20Policy.%202006.pdf.

³⁰ Ministry of Environment, Forest and Climate Change, “Eco-sensitive zone (ESZ)”, <https://moef.gov.in/en/division/forest-divisions-2/eco-sensitive-zone-esz/introduction-2/>.

³¹ Ministry of Environment and Forests, “Notification”, 14 September 2006, <http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>.

³² Section 2(c), The Biological Diversity Act, 2002, <https://www.indiacode.nic.in/bitstream/123456789/2046/1/200318.pdf>.

³³ Pushp Jain, “CITES and India”, April 2001, <https://www.traffic.org/site/assets/files/10042/cites-india.pdf>.
Also see: CITES, “India”, <https://cites.org/eng/parties/country-profiles/in>.

³⁴ International Coral Reef Initiative (ICRI), “Members”, <https://icriforum.org/members/>.

³⁵ ICRI Recommendation on International Trade in Corals, Coral Reef Species and Related Products, <https://icriforum.org/wp-content/uploads/2019/12/ICRI-recommendation-cites.pdf>.

At the regional level, India is a member of the South Asian Coral Reef Task Force (SACRTF), a programme under the South Asian Cooperation Environment Programme (SACEP). The SACRTF focuses upon the long-term management and conservation of marine and coastal resources in South Asia.³⁶ In 2008, based on the directions of the SACEP, the Gujarat Ecological Education and Research (GEER), came out with the “Regional Strategy for Coral Reef Management in South Asia”. This is a strategy document that emphasises the need for strengthening institutions involved in the management of coral reefs.³⁷ Also, during the G20 Environment Ministers meet in 2020, India adopted the “Global Initiative to reduce Land Degradation and Coral Reef Programme”.³⁸

At the national level, India, in compliance with the provisions of CITES, has established national authorities who monitor activities involving biological diversity. The central authority is the Ministry of Environment, Forest and Climate Change (MoEFCC), while the nodal scientific authority is the Zoological Survey of India, and the WCCB is the enforcement agency.³⁹ As the central authority established under the CITES, the MoEFCC has entered into numerous Memoranda of Understanding (MoUs) with various countries, including Denmark,⁴⁰ Sweden,⁴¹ Finland,⁴² Egypt (cooperation in the field of the environment),⁴³ with Brazil and South Africa (in the area of the environment under the IBSA Forum),⁴⁴ and the Bangladesh (on conservation of the Sundarbans).⁴⁵ Similarly, the WCCB monitors activities and imposes penalties and punishment on those who participate in illegal trade involving biological diversity. People committing crimes involving species

³⁶ South Asia Coral Reef Task Force, https://www.icriforum.org/wp-content/uploads/2019/12/ICRIGM24_SACRF.pdf.

³⁷ UN Environment Programme, “Regional strategy for coral reef management in South Asia”, <https://www.unep.org/resources/report/regional-strategy-coral-reef-management-south-asia>.

³⁸ Ministry of Environment, Forest and Climate Change, “Global Initiative to reduce Land Degradation and Coral Reef Program launched at G20 Environment Ministers Meet”, 16 September 2020, *Press Information Bureau*, <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1655306>.

³⁹ CITES, “India – National authorities”, <https://cites.org/eng/parties/country-profiles/in/national-authorities>.

⁴⁰ Memorandum of Understanding between the Government of the Republic of India and the Government of the Kingdom of Denmark on Cooperation in Areas of Environment, https://moef.gov.in/wp-content/uploads/2018/04/india_Denmark_MoU_0.pdf.

⁴¹ Memorandum of Understanding between the Government of the Republic of India and the Government of the Kingdom of Sweden on Cooperation in the field of the Environment, https://moef.gov.in/wp-content/uploads/2017/06/india_sweden_mou.pdf.

⁴² The Finland – India Joint Working Group on Environment (JWGE), “Memorandum of Understanding”, 31 January 2006, https://moef.gov.in/wp-content/uploads/2017/06/india_finland_mou.pdf.

⁴³ Memorandum of Understanding between the Government of the Republic of India and the Government of Arab Republic of Egypt on Cooperation in the field of Environmental Protection, <https://moef.gov.in/wp-content/uploads/2017/06/MoU-Egypt.pdf>.

⁴⁴ Memorandum of Understanding among the Governments of the Republic of India, the Federative Republic of Brazil and the Republic of South Africa on Cooperation in the Area of Environment under India Brazil South Africa (IBSA) Forum, https://moef.gov.in/wp-content/uploads/2017/06/india_brazil_south-africa_mou.pdf.

The **IBSA** is a unique Forum which brings together India, Brazil, and South Africa, three large democracies and major economies from three different continents, facing similar challenges.

⁴⁵ Memorandum of Understanding between the Government of the Republic of India and the Government of the People’s Republic of Bangladesh on Conservation of the Sundarbans, <https://moef.gov.in/wp-content/uploads/2017/06/MoU-Sundarban.pdf>.

mentioned under Schedule I of the 1972 Act, are prescribed extremely high penalties which could include imprisonment for between three and seven years.⁴⁶

In addition, India has created Marine Protected Areas (MPAs) to protect fragile coastal and marine ecosystems.⁴⁷ These include: **(i)** the Gulf of Kachchh Marine National Park,⁴⁸ **(ii)** the Mahatma Gandhi Marine National Park (Andamans), **(iii)** the Rani Jhansi Marine National Park (Ritchie’s Archipelago), and **(iv)** the two UNESCO heritage sites, namely the Gulf of Mannar Biosphere Reserve, and the Great Nicobar Biosphere Reserve.⁴⁹

In 2011, the UNDP partnered with the MoEF and the Government of Maharashtra to conserve the enormous biodiversity wealth of the coastal area of the district of Sindhudurg in Maharashtra, which is one of the eleven ecologically critical habitats in India.⁵⁰ Later, in 2020, the Maharashtra Government, requested the Wildlife Institute of India (WII) to conduct spatial mapping of critical marine habitats and reorganise the boundary of the Marine Malvan Sanctuary (MMS), which, too, is located in Sindhudurg District.⁵¹ The sanctuary is one of the most biologically diverse coastal regions in India. Its crystal-clear waters are home to extremely rich coastal biological diversity that is unique to the region, such as sea anemones, molluscs, polychaetes, pearl oysters, corals, seaweed, and mangroves.⁵²

On 22 August 2013, the MoEF, via an Extraordinary Gazetted Notification, declared a total area of 326.26 sq km along the Gulf of Kachchh Marine National Park as an ‘ESZ’.⁵³ With more than 70

⁴⁶ *Ibid.* 2, Badri Chatterjee, “930 pieces of ‘black corals’ worth ₹50-K seized from MMR, 2 held”.

⁴⁷ **Marine Protected Areas (MPAs)** are essentially a space in the ocean where human activities are more strictly regulated than surrounding waters – similar to parks on land. These places are given special protections for natural or historic marine resources by local, state, territorial, native, regional, or national authorities.

No Take Zones (NTZs) are areas designated in a number of the world’s MPAs, where all forms of exploitation are prohibited and severely limits human activities. These zones can cover an entire MPA or specific portions.

⁴⁸ Government of India, Ministry of Environment and Forests, “Notification”, 29 February 2012, <https://moef.gov.in/wp-content/uploads/2017/06/Marine%20national%20park,%20Gujarat.pdf>.

⁴⁹ INSIGHTSIAS, “Protection Measures of Coral Reefs”, <https://www.insightsonindia.com/world-geography/physical-geography-of-the-world/oceanography/coral-reefs/protection-measures-of-coral-reefs/>.

⁵⁰ UNDP, “People and Seas – Coastal and Marine Biodiversity in Sindhudurg”, 22 May 2014, <https://undp-india.exposure.co/people-and-seas>.

⁵¹ Badri Chatterjee, “33 years after being notified, Maharashtra Govt appoints WII to reorganise boundaries of Malvan marine sanctuary”, 21 December 2020, *Hindustan Times*, <https://www.hindustantimes.com/mumbai-news/33-years-after-being-notified-maharashtra-govt-appoints-wii-to-reorganise-boundaries-of-malvan-marine-sanctuary/story-1pqQPvWktbxgHWIvhwD4WL.html>.

⁵² Malvan Marine Sanctuary, Maharashtra, <https://www.tourmyindia.com/states/maharashtra/malvan-marine-sanctuary.html>.

⁵³ Ministry of Environment and Forests, “Notification”, 22 August 2013, <https://parivesh.nic.in/writereaddata/ENV/Eco-sensitiveZone/1.pdf>.

Also See: Ministry of Environment and Forests, Government of India, “Guidelines for declaration of eco-sensitive zones around national parks and wildlife sanctuaries”, 09 February 2011, http://forestsclearance.nic.in/writereaddata/Addinfo/0_0_1113121612211GuidelinesforESZ.pdf.

species of sponges, 37 species of hard coral, and 24 species of soft coral, the marine park is rich in biological diversity. The notification has also banned quarrying and other activities in the area.⁵⁴ In 2018, as part of the globally observed “International Year of the Reef”, a series of workshops were conducted for children living in the villages of North Andaman. Also, the Union Territory of Lakshadweep’s Administration, in collaboration with the Zoological Survey of India, organised an International Conference on Status and Protection of Coral Reefs (STAPCOR), with the theme, “Reef for Life”.⁵⁵

Challenges under International Law

Under the provisions of the 1982 UNCLOS, reefs play a significant role in the determination of national baselines. The Convention stipulates that an ‘archipelagic State’ may draw straight archipelagic baselines joining the outermost points of the outermost islands and drying reefs of the archipelago.⁵⁶ Activities such as illegal and unregulated trade, and coral mining, which diminish the extent of wild coral reefs, will adversely impact the delimitation of baselines of archipelagic States, leading to a possible increase in maritime claims and disputes among nations. Also, as per the data taken from the World Wildlife Seizures ‘World Wise’ database, nearly 7,000 species have been seized, including not just mammals, but reptiles, coral, birds, and fish. In addition, poaching appears to be the most problematic in the ‘Coral Triangle’, particularly in the waters around Indonesia, Malaysia, and the Philippines.⁵⁷

Challenges in India

Even with a complete ban on coral trade under the 1972 legislation, and despite a great deal of effort, incidents of illegal trade are on the rise.

In April 2022, as many as 466 live corals, packed in jars containing water and kept in two bags, were seized by Pune Customs officials from two Indian passengers arriving from Dubai with the intent to sell them.⁵⁸ Also, the Wildlife Conservation Society’s report ‘Illegal Trade of Marine Species in India 2015-21’ mentions that 120 sea cucumbers, 16 seahorses and pipefish, 18 sea fans (a variety of coral), and 16 seashells, numerous corals, and calcareous sponges were amongst the marine wildlife

⁵⁴ Neha Sethi, “polluting firms barred in Gulf of Kutch area”, 09 September 2013, *Live Mint*, <https://www.livemint.com/Politics/dZYTyaPR4ANm0VawFU0PiI/Polluting-firms-barred-in-Gulf-of-Kutch-area.html>.

⁵⁵ International Year of the Reef, “End of Year Report – IYOR 2018”, <https://www.iyor2018.org/wp-content/uploads/2019/06/2018-IYOR-REPORT-final-web.pdf>.

⁵⁶ *Ibid* 6, Article 47, UNCLOS.

⁵⁷ UNODC, “World Wildlife Crime Report – Trafficking in protected species”, 2016, https://www.unodc.org/documents/data-and-analysis/wildlife/World_Wildlife_Crime_Report_2016_final.pdf.

⁵⁸ Beauty without cruelty – India, “coral reefs of India”, <http://www.bwcindia.org/web/Awareness/LearnAbout/Coral.html>.

seized, with a number of cases being registered in the seven-year period. These were being smuggled to China, Malaysia, Singapore, Hong Kong, Sri Lanka, Pakistan, and Dubai.⁵⁹

Some of the specific legal and regulatory challenges in India include:

1. Gaps in International Law. As corals are mentioned in Appendix II of the CITES, trade is permitted by obtaining necessary permits. This promotes the unsustainable extraction of corals from the marine environment, thereby destroying coral-based fragile ecosystems and marine biological diversity that depend on these ecosystems. Further, certain species are excluded from the Convention itself. The IUCN has stated that 33 per cent of reef-building coral are considered threatened, but so long as trade is permitted under international law, the illegal and unregulated trade will also continue.

2. Gaps in National Law. Even though corals are mentioned under Schedule I, Part IVA of the 1972 legislation, the Schedule does not include all coral species and so, there is a demand for such excluded species, for both import and export. For instance, when the Karnataka Police decided to ban coral trade in the State in 2011, specifically trade involving sea fans (*Corallium rubrum*), jewellers across the State complained to the Gems and Jewellery Trade Council of India (GJTICI) stating that not all species are protected under Schedule I of the 1972 Act.⁶⁰ This incident highlights the legal vacuum. To solve the issue, Deputy Inspector General (Wildlife) Prakriti Srivastava, through a letter dated 24 January 2012 titled ‘Trade/sale of imported coral in India – reg.’ clarified the view of the jewellers:

“Corallium rubrum is neither listed in the Schedule of the 1972 legislation nor the 1973 CITES. Further, this species is not found in the Bay of Bengal, Indian Ocean or the Arabian Sea and is endemic to the Mediterranean Sea, and so such trade may be regulated according to the provisions of the Foreign Trade Policy (FTP)”.⁶¹

3. Contradictory Regulations. As per the 2017 ITC (HS) Import Policy, there is a complete restriction on the import of worked horn, coral and other animal carving material and articles thereof (HS Code: 96019040), as mentioned in Schedule I of the 1972 legislation.⁶² Contradicting this restriction, however, under the FTP, in 2008, due to the global recession, the basic customs duty on unworked or simply prepared corals and

⁵⁹ *Ibid.*

⁶⁰ Sowmya Aji, ‘Bangalore: jewellers oppose blanket ban on coral trade’, 12 May 2012, *India Today*, <https://www.indiatoday.in/magazine/nation/story/20120521-bangalore-jewellers-oppose-blanket-ban-on-coral-trade-758378-2012-05-12>.

⁶¹ Ministry of Environment and Forests (Wildlife Division), Government of India, ‘F. No. 3-2/93/WL-I (Pt)’, 24 January 2012, http://jab.org.in/apppics/Circular_on_Coral.pdf.

⁶² Director General of Foreign Trade, ‘ITC(HS) 2017 Schedule 1 – Import Policy’, <https://www.dgft.gov.in/CP/?opt=itchs-import-export>.

ITC(HS) stands for Indian Trade Classification Harmonised System of Coding.

polished cubic zirconia was reduced from 10 per cent to 5 per cent, followed by the complete removal of customs duty on rough cubic zirconia and rough corals.⁶³

4. Unregulated Coral Mining and Monitoring Issues. With little or no awareness about the impact of anthropogenic activities amongst the lay public, islands in Lakshadweep are witnessing a surge in unregulated coral mining, which severely damages the coral reefs. The mined corals are then processed, and the extract is used as a substitute for cement. Abdul Jabbar, a Range Forest Officer in Lakshadweep's Environment Department, stated that there is a "*need to raise awareness to control coral mining*". He went on to add, "... *although the total land mass of the Lakshadweep archipelago of 12 atolls is merely 32.69 sq km, the area covered by the lagoons is about 4,200 sq km, which makes it an impossible task to monitor such a huge area to prevent coral theft, poaching of marine life and illegal trade*".⁶⁴

5. Illegal Wildlife Smuggling. Illegal wildlife smuggling, involving certain species of marine biological diversity already threatened, also affects generic coral. For instance, the illegal smuggling of sea cucumbers, which are a protected species in India (mentioned under Part IV-C, Schedule I of the 1972 legislation), adversely affects coral reefs as these marine organisms help to recycle nutrients and excrete nitrogen, ammonia, and calcium carbonate, which are key for the survival of corals. Sea cucumbers also slow the ocean acidification process. There is a huge market for these marine organisms in China and Southeast Asian countries and as a consequence, the Palk Bay and the Gulf of Mannar are prone to over-exploitation of sea cucumbers. Studies show that their global population has fallen by more than 60 per cent.⁶⁵ Also, as per the IUCN Red List, a particular species of sea cucumber (*Thelenota ananas*) is considered to be threatened with extinction.⁶⁶

6. Aquarium Trade and Cyanide Fishing. The trade for live coral, led by burgeoning international demand, has led to an increase in illegal fishing for ornamental fish. The seriousness of this problem is underscored by the comment that "*Whereas today the average aquarium uses sterile white corals, it is entirely possible that the aquarium of tomorrow will contain nothing but living corals and fish*".⁶⁷ To augment traditional methods of catching fish, fishers now use small dosages of cyanide, which helps in stunning the fish, making them easy to catch. However, studies show that the use of cyanide also has a severely adverse impact

⁶³ Government of India, Ministry of Finance, Dept. of Revenue, "D.O.F.No.334/1/2008-TRU", 29 February 2008, https://www.indiabudget.gov.in/budget_archive/ub2008-09/cen/dojstru1.pdf.

⁶⁴ Soumya Sarkar, "the dying corals of Lakshadweep", 08 February 2019, *Earth Journalism Network*, <https://earthjournalism.net/stories/the-dying-corals-of-lakshadweep>.

⁶⁵ Richa Syal, "Seascape: the state of our oceans – 'Aphrodisiac' of the ocean: now sea cucumbers became gold for organized crime", 12 April 2021, *The Guardian*, <https://www.theguardian.com/environment/2021/apr/12/sea-cucumbers-organised-crime-smuggling-aphrodisiac-biodiversity-sri-lanka-india>.

⁶⁶ IUCN Red List, "*Thelenota ananas*", <https://www.iucnredlist.org/species/180481/1636021>.

⁶⁷ Edmund Green & Francis Shirley, "The Global Trade in Corals", 1999, WCMC Biodiversity Series No. 10, *World Conservation Monitoring Centre*, <https://www.yumpu.com/en/document/read/27540923/the-global-trade-in-corals-unep-world-conservation-monitoring->

upon coral.⁶⁸ With no international binding regulations in place, although a few countries have individually banned the use of cyanide for fishing, fishers from nations located within the ‘Coral Triangle’ frequently resort to such harmful methods of catching fish.

Impact of the Illegal and Unregulated Trade

As significant and magnificent corals and coral reefs are, these marine ecosystems are already under threat, and illegal and unregulated trade only worsens the situation. Data retrieved from the 1992 “International Coral Reef Symposium” (ICRS) indicates that anthropogenic activities have resulted in the death of 5-10 per cent of the world’s living reefs, with an estimate of an additional 60 per cent being lost in the next 20–40 years.⁶⁹ The UN mentions that of 70 per cent of the Earth’s corals, 20 per cent have already been destroyed with no hope for recovery, another 24 per cent face imminent risk of collapse, and an additional 26 per cent is at risk due to long-term threats.⁷⁰ In a recent study conducted by the IUCN, it was found that the coral reefs in 10 countries in the Western Indian Ocean are at risk of complete collapse and irreversible damage within the next five decades.⁷¹

Available data also suggest that trade in corals and reef species, led by seemingly insatiable international demand, has resulted in the annual removal of 30 million fish, 1.5 million live stony corals, over 2 million kilograms of dead coral, 30-50 metric tonnes of red and black coral, and over 2,500 metric tonnes of shells. In addition, the global trade in marine ornamentals for aquariums alone targets over 1,500 species of reef fish, 500 species of invertebrates, and hundreds of coral reefs, live corals and coral rocks.⁷² While some countries, such as Yemen, import corals as part of the spice trade,⁷³ others import corals to make jewellery and curios.⁷⁴ Similarly, it is estimated that by

⁶⁸ Fred Pearce, “Cyanide: an easy but deadly way to catch fish”, 29 January 2003, *WWF*, https://wwf.panda.org/wwf_news/?5563/Cyanide-an-easy-but-deadly-way-to-catch-fish#:~:text=Catching%20live%20fish%20using%20cyanide,net%2C%20or%20even%20by%20hand.

⁶⁹ *Ibid* 12, Fahmeeda Hanfee, “Trade in Corals”.

⁷⁰ *Ibid*. 7, Carrie Manfrino, “Can we save coral reefs?”.

⁷¹ David Obura, et.al “Vulnerability to collapse of coral reef ecosystems in the Western Indian Ocean”, 06 December 2021, *Nature Sustainability*, <https://www.nature.com/articles/s41893-021-00817-0.pdf>.

⁷² Brian N Tissot, et.al “How US ocean policy and market power can reform the coral reef wildlife trade”, 05 June 2010, *Marine Policy*, https://www.livingoceansfoundation.org/wp-content/uploads/2013/08/Marine-Policy-article_finalPROOFS.pdf.

Marine ornamentals include clownfish, dottybacks, cardinalfish, gobies, and seahorses.

Also see: Jeana L Drake, et.al “How corals made rocks through the ages”, 06 November 2019, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6942544/>.

⁷³ An example is **Tubipora** or the organ-pipe coral. The organ-pipe coral (*Tubipora musica*) is an alcyonarian octocoral native to the waters of the Indian Ocean and the central and western regions of the Pacific Ocean. It is the only known species of the genus Tubipora.

Also see: Sanjay Saklan, “Threats – Organ pipe coral”, Project Noah, <https://www.projectnoah.org/spotting/13260447>.

⁷⁴ Hiromi Shiraishi, “Seeing Red – Precious coral trade in East Asia”, September 2018, *TRAFFIC REPORT*, <https://www.traffic.org/site/assets/files/11127/seeing-red.pdf>.

2030, 90 per cent of the reefs will be in danger and are likely to cause hunger, poverty and political instability around the world as the livelihoods of millions of people would disappear.⁷⁵

Since we do not know what we do not know, the challenge becomes even more formidable. As Dr Frederick Grassle of Rutgers University has ominously stated, “*We know that seamounts support large pools of undiscovered species, but we cannot yet predict what is on the unstudied ones. The tragedy is that we may never know how many species become extinct before they are identified*”.⁷⁶

Recommendations for the Government of India

1. MoEFCC

1.1. International Level. As the central authority established under the 1973 CITES, and in order to protect, conserve and preserve corals and coral reefs globally (considering their significance) it is recommended that the MoEFCC:

- 1.1.1.** Provide for the inclusion of all species of corals in the 1973 Convention (Appendix II).
- 1.1.2.** Provide adequate protection to corals by shifting the entire Class from Appendix II to Appendix I, which would also put a complete ban on any commercial trade.
- 1.1.3.** Include aspects relating to the conservation, protection and sustainable use of the marine environment, marine biological diversity, specifically, corals and coral reef areas, in the MoUs concluded with other countries.

1.2. National Level. The Wildlife (Protection) Act, 1972 imposes a complete ban on trade involving species, including coral species mentioned in Schedule I of the Act. However, since certain species of coral are excluded from Schedule I, it is recommended that the MoEFCC should:

- 1.2.1.** Add the excluded species of coral into Schedule I of the Wildlife (Protection) Act, 1972, with suitable guidance being provided for such additions by the Zoological Survey of India.

⁷⁵ Srihitha Baswapoor & Zareena Begum Irfan, “Current Status of coral reefs in India: Importance, rising threats and policies for its conservation and management”, July 2018, Working Paper 175/2018, *Madras School of Economics*, <https://www.mse.ac.in/wp-content/uploads/2021/05/Working-Papepr-175.pdf>.

⁷⁶ Dr Frederick Grassle of Rutgers University quoted in “Lost worlds of the ocean threatened by trawlers” by Roger Highfield, Science Editor. UK Telegraph 23/8/2003.

- 1.2.2. Enhance the effectiveness of ‘deterrence-by-punishment’ by increasing the quantum of punishment provided-for in the Wildlife (Protection) Act, 1972 .
 - 1.2.3. Create an official database that is made available to the general public, which provides details in respect of: **(i)** MPAs, including ‘no-take zones’, **(ii)** ESZs, **(iii)** corals and coral reef areas, including the ones classified under UNESCO and **(iv)** other marine sanctuaries.
 - 1.2.4. Establish ‘Ramsar Sites’ under the Ramsar Convention to protect coral reefs from the impact of anthropogenic activities.
 - 1.2.5. Enhance the capacity and capability of the WCCB, the enforcement agency established under the 1973 CITES, to enable the identification of the source of illegal and unregulated trade of corals, before they reach the shore.
 - 1.2.6. Improve and enhance the monitoring and enforcement capacity of the concerned departments within the Union Territories of Lakshadweep Islands and the Andaman and Nicobar Islands, since these are hotspots for coral mining, theft, and illegal trade.
2. **Ministry of Commerce and Industry.** It is recommended that the Ministry impose stringent bans on items created/crafted from any and all species of corals (even if such species are excluded from Schedule I of the Wildlife (Protection) Act, 1972) from being imported into India.
 3. **Ministry of Finance.** It is recommended that the Ministry impose stringent penalties by way of customs duty on any attempt to import items created/crafted from any and all species of corals imported to India.
 4. **Ministry of Defence.** As the principal maritime law-enforcement agency tasked with countering illegal maritime activities within India’s maritime zones, including those involving wildlife smuggling, and IUU fishing, and given that under the 1981 MZI Act, the definition of the term ‘fish’ includes corals, it is recommended that the Indian Coast Guard (ICG) and the WCCB collaborate closely to identify the sources of illegal trade in corals, the areas where coral mining is conducted, and the medium of transport used to carry cargoes of illegally mined coral to locations ashore, and thereafter, carry out arrests of the offenders and the seizure of the illegal items, and hand them over to the WCCB.
 5. **Ministry of Fisheries, Animal Husbandry and Dairying.** It is recommended that the Department of Fisheries develop comprehensive guidelines and regulations regarding the capture and trade of ornamental fish, specifying permissible (sustainable) methods, and impose a complete ban on the use of cyanide for the capture of such fish. The Ministry, assisted by the Zoological Survey of India, also needs to share scientific and biological

knowhow with other ministries involved in the protection and conservation of corals and other marine organisms.

- 6. National Maritime Foundation (NMF).** Being India's sole thinktank that conducts independent and policy-relevant research on all 'matters-maritime', the NMF could play a vital role in creating awareness about the significance of conserving and protecting coral reef ecosystems. Collaborating with relevant stakeholders, both international — such as the TRACIT (Transnational Alliance to Combat Illicit Trade),⁷⁷ CORAL (Coral Reef Alliance),⁷⁸ CORDAP (Coral Research and Development Accelerator Platform),⁷⁹ and national ones such as CASCADE (Committee Against Smuggling and Counterfeiting Activities Destroying the Economy),⁸⁰ Reef Watch,⁸¹ Terra Conscious,⁸² SMRC (Society for Marine Research and Conservation),⁸³ Coastal Impact,⁸⁴ Wildlife Trust of India,⁸⁵ MSSRF (M S Swaminathan Research Foundation)⁸⁶ INCOIS (Indian National Centre for Ocean Information Services),⁸⁷ and participation in events like the ICRS,⁸⁸ and the GCRMN (Global Coral Reef Monitoring Network) workshop, would improve knowledge and its dissemination to policy-makers. As such, this process is strongly recommended.⁸⁹

Conclusion

Analysing the past... (*“At fifteen fathoms depth...It was the coral kingdom. The light produced a thousand charming varieties, playing in the midst of the branches that were so vividly coloured. I seemed to see the membranous and cylindrical tubes tremble beneath the undulation of waters. I was tempted to gather their fresh petals, ornamented with delicate tentacles, some just blown, the others budding, while a small fish, swimming swiftly, touched them slightly, like a flight of birds”*⁹⁰), the present... (*“Clearly we are in the midst of one of the greatest extinction spasms of geological history”*⁹¹) and assessing the future... (*“Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat, which are now gravely imperilled by a combination of adverse factors. Nature*

⁷⁷ TRACIT, <https://www.tracit.org/>.

⁷⁸ CORAL, <https://coral.org/en/>.

⁷⁹ CORDAP, “A G20 initiative”, <https://cordap.org/>.

⁸⁰ FICCI CASCADE, <https://www.ficcicascade.in/>.

⁸¹ Reef Watch, “Marine Conservation”, <https://reefwatchindia.org/>.

⁸² TERRA CONSCIOUS, <https://www.terraconscious.com/>.

⁸³ SMRC, <https://smrcindia.in/>.

⁸⁴ Coastal Impact, “Marine conservation, education and research”, <https://coastalimpact.in/>.

⁸⁵ Wildlife Trust of India, <https://www.wti.org.in/>.

⁸⁶ MSSRF, <https://www.mssrf.org/>.

⁸⁷ INCOIS, <https://incois.gov.in/portal/CoralReef.jsp>.

⁸⁸ ICRS, <https://www.icrs2022.de/>.

⁸⁹ GCRMN, <https://gcrmn.net/workshop-reports/>.

⁹⁰ Jules Verne, “A Watery Funeral”, 1868, *Lapham's Quarterly*, <https://www.laphamsquarterly.org/sea/watery-funeral>.

⁹¹ Matthew Gianni, “High seas bottom trawl fisheries and their impacts on the biodiversity of vulnerable deep-sea ecosystems”, 2004, *Report prepared for IUCN, NRDC, WWF and Conservation International*, <https://portals.iucn.org/library/sites/library/files/documents/2004-053.pdf>.

*conservation, including wildlife, must receive importance in planning for economic development”.*⁹²) of coral reefs, and other natural ecosystems, and also keeping in mind the significance of coral reefs, the Government of India needs to act upon the recommendations provided in this article to prevent further damage to coral reefs. India also needs to promote the use of artificial reefs, and sustainable methods of reef cultivation in the natural environment, in order to restore the damage already caused due to anthropogenic activities. With the ability to determine the economic development of not just its own island territories of Lakshadweep, and Andaman and Nicobar, but also that of the several SIDS located within India’s proximate maritime neighbourhood — to many of whom India stands as a beacon of hope for a sustainable and ‘bluer’ economic future — it is necessary for India to be demonstrably able to translate the nobility of its several articulations into tangible and visible action. Conserving and protecting coral reefs would catapult India into the very forefront of nations that are leading the global endeavour to attain SDG 14.

About the Author

John J Vachaparambil is an Associate Fellow with the Public International Maritime Law (PIML) cluster at the National Maritime Foundation. His current research focuses on the legal aspects of IUU fishing in India and the conservation of marine biodiversity beyond areas of national jurisdiction (BBNJ). He may be contacted at lan5.nmf@gmail.com.

⁹² *Ibid* 33, Pushp Jain, “CITES and India”.