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# Combating Marine Pollution from Land-Based Activities (MPLBA) in Bangladesh: A Legal Analysis

**Preeti Kana Sikder**[*]

***Abstract****: Land-based sources of marine pollution pose one of the most serious threats to the marine environment of Bangladesh. While the Bay of Bengal under Bangladesh's territory provides the whole country with numerous opportunities and hope for a sustainable future, increased marine pollution from land-based sources is making those benefits run dry. This article explores the legal standards set by Bangladesh with a particular focus on the land-based activities polluting the marine environment. It discovers that the national legal and policy framework on environmental protection addresses the issue of marine pollution from land-based activities (MPLBA) step-by-step. However, those ambitious initiatives sadly fall short of holistic implementation measures. The paper finally identifies how the existing national, regional and international legal framework can best be applied to combat marine pollution from land-based activities in Bangladesh.*

**Keywords:** Marine Environment, Marine Pollution from Land based Activities, Environmental Law, Environmental Policy

## 1. Introduction

Being under a process of active delta development and morphological changes by the Ganges-Brahmaputra-Meghna River system,[1] the coastal zone of Bangladesh is the second largest delta of the world right after Amazon. As a network of 230 intertwined rivers crisscross through this country, they bring sediments into the Bay of Bengal in large quantity. Bound to these sediments are unknown quantities of poisonous residues from agricultural chemicals, industrial residues, farm effluents, solid waste, sewage disposal etc.[2] With a 710 km long coastline, Bangladesh is home to around 36 million coastal inhabitants,

[*] Assistant Professor, Department of Law, Faculty of Security and Strategic Studies, Bangladesh University of Professionals, Dhaka 1216, Bangladesh

[1] Department of Environment, Bangladesh Programme of Action for Protection of the Marine Environment from Land-based Activities (2006) <https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/publications/2686e3bc_b152_44fb_964b_1746bc42092d/NPA%20Final%20Draft%20(1).pdf> accessed 12 December 2024

[2] ibid.

representing 29 per cent of the country's total population.[3] Naturally, the issue of coastal management has been of great importance to the decision-makers in this land. However, increased level of marine pollution is appearing as a serious threat to the Bangladeshi ecosystem.

The most widely accepted definition of marine pollution is the one devised by the Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), created under the UN Convention on the Law of the Sea (UNCLOS) 1982, where marine pollution is defined under article 1.4 as:

> "…the introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water, and reduction of amenities."

The 'substances or energy' as referred to in this definition are the wastes resulting from the transformation of matter to produce goods or energy. However, not all wastes are pollutants per se. Only those resulting in 'deleterious effects' are termed as so. Therefore, pollution occurs when wastes are not utilized and, in addition, are not-assimilated harmlessly by the system into which they are introduced, e.g., the sea. The legal definition of marine pollution applicable in Bangladesh has been adapted almost word-by-word from this same GESAMP definition through the 2021 amendment of the Territorial Waters and Maritime Zones Act of 1974.[4]

The marine environment not only supports the foundation of much of the world's economy but also provides the planet with essential services such as climate regulation, storm protection, food security, and nutrient cycling. Regardless of this importance, oceans are suffering from degradation mainly as a result of human activities. Globally 10,000 million gallons of sewage, 3.25 million metric tons of oil, 10 billion tons of ballast water and millions of tons of solid waste are discharged into the marine environment annually.[5] Many of these compounds are very persistent in the aquatic environment, bio-accumulates in marine organisms, and is highly toxic to humans via the consumption of seafood.[6]

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[3] Hafez Ahmad, 'Bangladesh Coastal Zone Management Status and Future Trends' (2019) 22(1) Journal of Coastal Zone Management <https://www.longdom.org/open-access/bangladesh-coastal-zone-management-status-and-future-trends-18228.html> accessed 12 December 2024

[4] Section 2(10) of the Territorial Waters and Maritime Zones Act 1974

[5] Jatish Chandra Biswas, M. M. Haque, Md. Maniruzzaman, Sh Akhtar, Naveen Kalra, 'Coastal and Marine Pollution in Bangladesh: Pathways, Hotspots and Adaptation Strategies' (2021) 2(4) EJEES <https://www.ej-geo.org/index.php/ejgeo/article/view/133/84> accessed 16 March 2024

[6] Department of Environment, Bangladesh Programme of Action for Protection of the Marine Environment from Land-based Activities (2006) <https://doe.portal.gov.bd/sites/default/files/

Such level of pollution arising from land-based sources is highly problematic for the entire world's ecosystem.

The prime objective of this paper is therefore to analyze the existing Marine Pollution from Land Based Activities (MPLBA) legal regime of Bangladesh. In light of the required international and regional standards, the national measures from legislative and institutional approaches are discussed and analyzed. Firstly, the nature of the problem caused by MPLBA and reasons for such rising pollution of the marine environment of Bay of Bengal is explored. This paper then goes on to discuss how the global MPLBA regime, with support of the regional mechanism, makes the control and prevention of MPLBA possible in Bangladesh. Finally, by analyzing the latest developments in the international and regional MPLBA regime, this paper suggests ways to improve the national implementation and enforcement mechanism of MPLBA legal regime.

Methodologically, this paper is qualitative and is primarily exploratory in nature. While analyzing the existing legal measures to control marine pollution generated due to land-based activities from global, regional and national context, all three levels of legal and institutional frameworks are consulted. A descriptive approach has been taken in addressing those legal documents prevailing in relation to Bay of Bengal and investigating the latest literature relating to land-based pollution in Bay of Bengal.

Finally, the query as to the MPLBA regime in Bangladesh is addressed through an analytical approach. The research has been conducted based on both primary and secondary data. Legislations, government reports and policy documents were consulted as primary sources, while scholarly articles, newspapers and conference papers were consulted as secondary sources of data.

Therefore, the concept within this research involves three variables and their interconnections are explored one by one to derive the efficacy of the entire MPLBA legal regime in Bangladesh. The variables are: the international MPLBA regime applicable for Bangladesh, the regional MPLBA measures and the national MPLBA regime. Which are illustrated below:

files/doe.portal.gov.bd/publications/2686e3bc_b152_44fb_964b_1746bc42092d/NPA%20Final%20Draft%20(1).pdf> accessed 10 March 2024

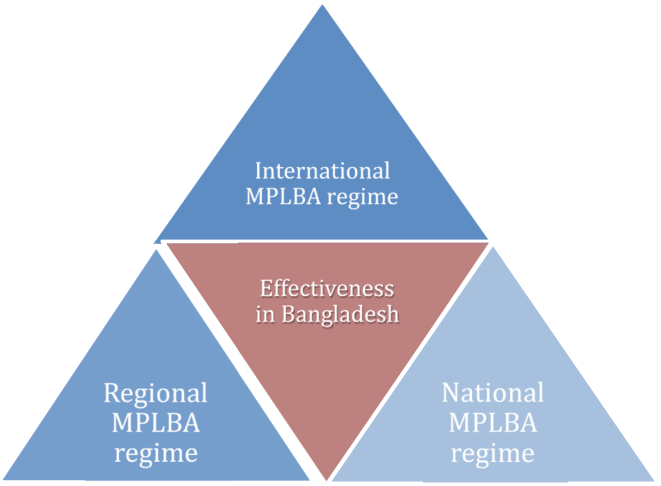


**Figure 1:** Conceptual Framework on the Effectiveness of MPLBA regime in Bangladesh

First, the requirements discussed upon in order to prevent and mitigate MPLBA from international perspective will be described. Next, in compliance to those international standards, how the regional and national MPLBA regime has developed will be described. In the following chapter, the gaps will be identified as to implementation and enforcement in national arena. Finally, suggestions will be made in improving the efficacy of MPLBA regime in Bangladesh.

## 2. Understanding Marine Pollution from Land-based Activities (MPLBA)

Marine pollution occurs from two sources - land-based sources and sea-based or vessel sources. Pollution from the sea-based or vessel-based sources, including shipping and fishing activities; offshore mining and extraction; oil spill, legal and illegal dumping at sea, are often thought by general people to be the core causes of marine pollution. Such polluting activity appears to be something distantly happening only at the coastal and marine area, not connected to daily humdrums of upstream urban and rural lives. However, the reality is entirely different. In fact, a significant portion of marine pollution comes from sources much closer to our everyday lives. About 80 per cent of marine pollution originates from land-based sources[7] which are commonly termed as Marine Pollution from Land-based Activities (MPLBA). It is also referred to in different literature as Marine Pollution from Land-based sources (LBS[8]) Land-based Sources and Activities

[7] Delia Paul, 'Protecting the Marine Environment from Land-based Activities' (IISD Policy Brief, January 2021) <https://www.iisd.org/articles/deep-dive/protecting-marine-environment-land-based-activities> accessed 12 March 2024

[8] Andre Nollkaemper, 'Marine Pollution from Land-based Sources: Towards a global approach', MPB 24(1) (1992)

(LBSA)[9] Land-based Marine Pollution (LBMP) or (LMP).[10]

It is challenging to determine the relationship between the nature of marine pollution and appropriate countermeasures. Factors contributing to this difficulty include the vastness of the oceans, variability in emissions and impacts, and limited understanding of marine ecosystems.[11] However, the common coastal area pressures which are biggest contributors to MPLBA have been identified as tourist development, urbanization, industrial facility sittings, aquaculture, agriculture and deforestation.[12] According to the National Report of Bangladesh on Coastal Pollution Loading and Water Quality Criteria of the BoBLME[13] and United Nations Environmental Program (UNEP)[14] the following substances are the most important contaminants that threaten marine and coastal ecosystems of Bangladesh:

| **Contaminants** | **Sources of degradation (coastal & upstream)** | | **Atmospheric deposition caused by** |
|---|---|---|---|
| | **Point sources** | **Non-point sources** | |
| Sewage | Waste-water treatment facilities | Urban run-off | Transportation (vehicle and shipping emissions) |
| Persistent organic pollutants | Recreational/ tourism facilities | Agricultural and horticultural run-off | Power plants and industrial facilities |
| Radioactive substances | Construction works (such as, dams, coastal structures, harbor works and urban expansion) | Forestry run-off | Incinerators |

[9] UNEP, *Implementation of the GPA at regional level: The role of regional seas conventions and their protocols* (2018)

[10] Md. Wahidul Alam, Sara Qayum, Md. Monjur Hasan, and Xu Xiagmin, 'Land based marine pollution control in Bangladesh: A Suggested framework with a critical analysis of national legal issues' (2021) IJGMS 47(10)' Abdullah Al Arif and Md. Ershadul Karim, 'Marine Pollution and the South Asian Coastal States: A Legal Appraisal' 2 MqJICEL (2013)

[11] Elizabeth A. Kirk, 'Noncompliance and the Development of Regimes Addressing Marine Pollution from Land-Based Activities' (2008) 39(3) Ocean Development & International Law 235.

[12] David L. VanderZwaag and Ann Powers, 'The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance' (2008) 23 The International Journal of Marine and Coastal Law 423

[13] Md. M. Maruf Hossain, Country report on pollution in the BOBLME (2011)

[14] UNEP, *Global Plan of Action (GPA)* <https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/partners/global-plan-action-gpa> accessed 3 February 2024

| | | | |
|---|---|---|---|
| Heavy metals | Coastal mining (such as, sand and gravel) | Mining waste run-off | Agricultural operations |
| Oils (hydrocarbons) | Research centers | Construction run-off | |
| Sediment mobilization | Aquaculture | Landfills and hazardous waste sites | |
| Nutrients | Introduction of invasive species | Erosion as a result of physical modification of coastal features | |
| Marine litter | Physical alteration, including habitat modification and destruction | Dams and irrigation up-stream, depleting nutrient and freshwater flows into estuaries | |
| | Military installations | | |
| | Power plants | | |
| | Industrial facilities | | |

**Table 1:** MPLBA contaminants

Measures to combat MPLBA are closely connected with general environmental conservation measures. Nonetheless, separate attention to MPLBA is essential. There is a general paradigm[15] that makes the interconnection between these two very crucial in the modern era. As human beings move into the coastal area, they build homes and workspaces and change the use of land, which changes land cover. As land cover changes, the quality of streams changes which affects the habitats of living marine resources. These changes impact the abundance, distribution, and health of marine resources, which in turn affect people's livelihoods and local economies.:[16]

[15] James P. Thomas, 'Remote Sensing and Relating Coastal Development to Living Marine Resources and Their Habitats' (1995) 15(1) Natural Areas Journal 21

[16] ibid.

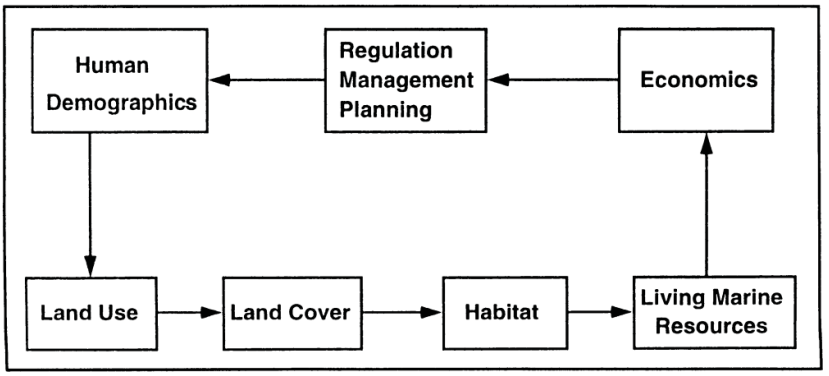


**Figure 2:** General paradigm describing relationship of people to habitat, living marine resources, and management of those resources

The existence of this paradigm is a proof that the coastal areas around the world are indeed going through exemplary changes caused by human activities. According to Alicia Barcena[17], ocean problems feature a host of linkages to three major sectors, such as: a) linkages to the environment; b) linkages with economic and development sector and c) linkages to the society. Each of these sectors demonstrate a complex web of connection to the coastal and oceanic issues as illustrated below –

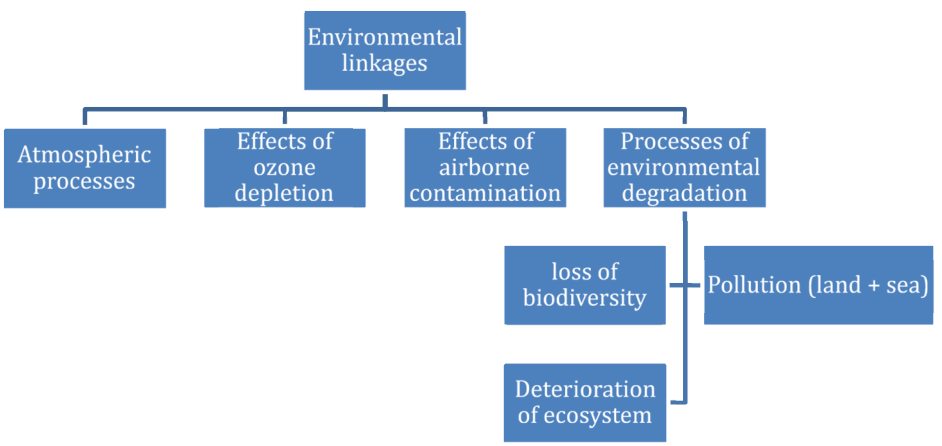


**Figure 3**: Environmental linkages with ocean problems

Ironically, MPLBA fails to capture the public imagination. In fact, scientific investigation focusing into marine pollution was <2% in peer-reviewed journals

[17] Alicia Barcena (1992), An Overview of the Oceans in Agenda21 of the 1992 United Nations Conference on Environment and Development, Marine Pollution Bulletin, Volume 25, 1 4, pp. 107-111

among the articles on marine citizen science up to 2020.[18] The reason perhaps can be that the land-based sources of pollution are less noticeable than dramatic events such as tanker accidents, oil spills, or holes in the ozone layer.[19] For example, in case of waste management, often the process is regulated only up to the stage when the harmful content is being dumped away from localities. When environmental concerns are being addressed in the process, if the stench does not reach us, even if it is polluting the ocean waters, we have a tendency to consider the job of waste management well done.

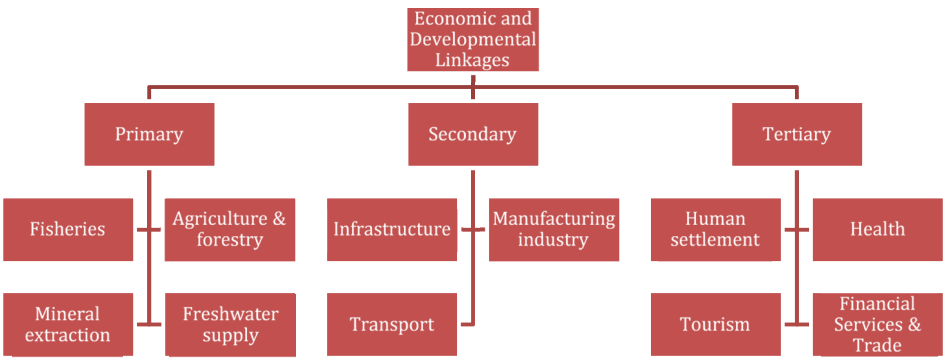


**Figure 4**: Economic and developmental linkages with ocean problems

The Bay of Bengal region in its inner reaches is heavily influenced by the inflow from the Ganges/ Padma, Jamuna, Brahmaputra, and Irrawaddy river systems, which are all associated with large populations, major cities and intensive agricultural activity, resulting in significant nutrient inputs as well as chemical pollution.[20] Since the broad range of land-based activities has a cumulative impact on coastal and marine environments, the sustainable development and protection of such environments pose challenges that demand multidisciplinary and cross-sectoral approaches and require far more than tough sanctions to punish the environmental 'bad guys'.[21]

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[18] Hannah S. Earp and Arianna Liconti, 'Science for the Future: The Use of Citizen Science in Marine Research and Conservation' in Simon Jungblut, Viola Liebich and Maya Bode-Dalby (eds), *YOUMARES 9 – The Oceans: Our Research, Our Future* (SpringerOpen 2020)

[19] Caroline Williams, 'Combatting marine pollution from land-based activities: Australian initiatives' (1966) 33(1-3) Ocean & Coastal Management 87

[20] Food and Agriculture Organisation, 'Final evaluation of Sustainable Management of the Bay of Bengal Large Marine Ecosystem (BOBLME) project' <https://www.fao.org/publications/card/en/c/5104910a-857d-44b6-87a8-d66203ee297b> accessed 20 December 2023

[21] David Osborn and Anjan Datta, 'Institutional and policy cocktails for protecting coastal and marine environments from land-based sources of pollution' (2006) 49 Ocean & Coastal Management 576

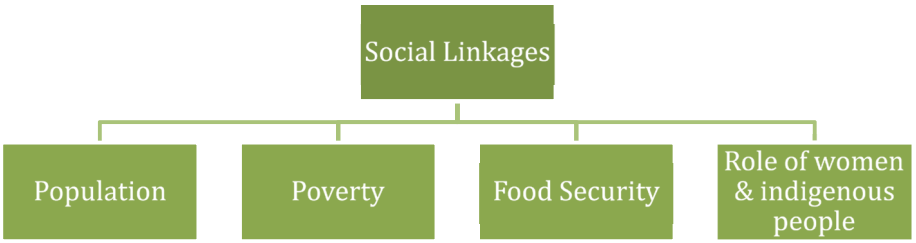


**Figure 5**: Social linkages with ocean problems

The sheer vastness of the scope of environmental pollution cannot be understood without realizing the problems faced by the marine environment. These linkages portray a highly complex system of functioning that require multifaceted legislative and regulatory approaches. MPLBA is therefore a critical problem that requires efforts from multiple stages.

## 3. Existing Levels of MPLBA Legal Regime

MPLBA legal regimes consist of legal standards designed to effectively control, reduce, and eliminate these abovementioned pollutants leading to marine pollution from land-based activities. In order to achieve its goal, MPLBA regimes have to be built on the understanding of the sources, impacts and responses to marine pollution. As marine pollution is one of those environmental issues that transcend national boundaries, global initiatives to control MPLBA are crucial.

However, the oceanic regions of the world vary a lot from each other in geophysical and societal contexts. The governance of human activities on land that have an impact on the marine environment is especially difficult to grasp.[22] As a result, cooperation among regional institutions is also essential to address the required solutions to the problem of MPLBA. It is undeniable that the exchange of information, scientific research and technical assistance between countries to assist lawmakers and policymakers, are the most critical aspect of environmental protection measures.[23] Hence, the environmental governance regime regulating marine pollution needs to have a cooperative multi-leveled mechanism as illustrated below:

### A. *International Regime on MPLBA*

MPLBA has been an issue of global concern for a very long time. Back in

[22] David L. VanderZwaag and Ann Powers, 'The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance' (2008) 23 The International Journal of Marine and Coastal Law 423

[23] ibid.

1982, it was identified as the fundamental duty of a state to prevent, reduce and control pollution of the marine environment from land-based activities under the UN Convention on the Law of the Sea (UNCLOS).[24] As the only global treaty that specifically addresses land-based sources of marine pollution, Article 207 of this document requires states to adopt laws to prevent and control land-based sources of marine pollution.[25] In this article, land-based sources include rivers, estuaries, pipelines and outfall structures.[26] It also encourages states to establish global and regional rules and standards for this purpose. Since then, the governance mechanism relating to MPLBA has evolved due to the vast number of additional instruments involved.

As starters, the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) focuses on reducing Green House Gas (GHG) emissions which directly relates to reduction of pollution from land. When coastal protected areas are concerned, the Ramsar Convention comes into play. In order to control the dumping of toxic chemicals into the sea, the Stockholm Convention on Persistent Organic Pollutants (PoP) become relevant. Also, the International Law Commission (ILC) drafted the Articles on Responsibility of States for Internationally Wrongful Acts (2001) and Prevention of Transboundary Harm from Hazardous Activities (2001) which codified various rules and principles relevant to transboundary pollution originating from land or threatening transboundary adverse effects from land-based activities.

The governance picture is further complicated by the many guiding principles emerging in international environmental law relevant to land based marine pollution and activities.[27] Those principles include, among others, the precautionary principle, pollution prevention, public participation, environmental impact assessment, integration (including integrated pollution control) and polluter pays principle. All these international documents can be discussed from two perspectives: global conventions, which are legally binding and global agreements, which are generally non-binding. Among these international instruments the ones relevant to Bangladesh in combating MPLBA are listed below:

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[24] Bangladesh ratified UNCLOS on 27 July 2001.

[25] UNEP, *Implementation of the GPA at regional level: The role of regional seas conventions and their protocols* (2018)

[26] Article 207(1) of the UNCLOS 1982

[27] David L. VanderZwaag and Ann Powers, 'The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance' (2008) 23 The International Journal of Marine and Coastal Law 423

| Global Conventions | Non-binding International Agreements |
|---|---|
| Convention on Wetlands or Ramsar Convention; | Rio Declaration on Environment and Development; |
| World Heritage Convention concerning the Protection of the World Cultural and Natural Heritage; | Global Program of Action for the Protection of the Marine Environment from Land based Activities (GPA); |
| Basel Convention on theTransboundary Movements of Hazardous Wastes and their Disposal; | UNEP Regional Seas Program; |
| United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement; | Sustainable Development Goals or Global Goals |
| United Nations Convention on the Law of the Sea (UNCLOS) | Rio Declaration on Environment and Development; |

**Table 2:** International Instruments relevant to National MPLBA Legal Regime

Bangladesh has taken the lead in many of the international events and been a part of all of the above-mentioned instruments. Among these existing documents, the discussion of this article is particularly focused on the compliance of the Bangladeshi authority on Global Program of Action (GPA) for the Protection of the Marine Environment from Land based Activities. The reason being that, it is the prominent source of authority when it comes to MPLBA legal regime.

The GPA is unique in the sense that it is the only global environment initiative directly addressing the connectivity between terrestrial, freshwater, coastal and marine ecosystems.[28] Being adopted in 1995, aim of this program was to counter the issue of land-based pollution by taking sustained and effective action to deal with all land-based impacts on marine environment. This document takes a 'soft law' approach in guiding member states in how to address land-based activities affecting the marine environment at three stages - national, regional and global. Bangladesh started preparing its National Program of Action (NPA) under the aegis of GPA in 1999. Later in 2003, at the meeting on GPA for South Asia Region, several projects were selected for funding at pilot scale to be implemented in Bangladesh.[29]

[28] UN, 'Governing the Global Programme of Action' <https://www.unep.org/explore-topics/oceans- seas/what-we-do/addressing-land-based-pollution/governing-global-programme> accessed 29 April 2023].

[29] Department of Environment, Bangladesh Programme of Action for Protection of the Marine Environment from Land-based Activities (2006) <https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/publications/2686e3bc_b152_44fb_964b_1746bc42092d/NPA%20Final%20Draft%20(1).pdf> accessed 12 December 2024

While the GPA aims at preventing the degradation of the marine environment from land-based activities, it facilitates the realization of the duty of states to preserve and protect the marine environment. It is designed to assist states in taking actions individually or jointly within their respective policies, priorities and resources leading to the prevention, reduction, control and/or elimination of the degradation of the marine environment, as well as to its recovery from the impacts of land-based activities.[30]

### B. *Regional MPLBA Regime*

Sixteen regions have general action plans or programs that include marine pollution from land-based activities.[31] Experts have exclaimed that it would be nonsensical for any state to unilaterally attempt to protect its environment.[32] Therefore, Bangladesh has made its mark in collaborative efforts logically. The South Asian Seas region is where the territory of Bangladesh is adjacent to. Major activities taken up in this region in order to control and prevent MPLBA are overseen by the eight neighboring countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. Brief description of the major entities in this regard are given below -

Among the relevant regional entities, the IOC Regional Committee for the Central Indian Ocean (IOCINDIO) plays a leading role. This organization is influential in its regard as it has been functioning since 1982. The major activities of this committee include: ocean observations, coastal zone management, circulations and fisheries. It works to control ocean hazards through coastal vulnerability assessment for sea level rise and storm surges. Secretary (Maritime Affairs Unit) of Foreign Ministry of Bangladesh, Md Khurshed Alam, was elected as the chairperson of the IOC Regional Committee for the Central Indian Ocean (IOCINDIO) for the term May 2021-May 2023.[33]

The South Asia Cooperative Environment Program (SACEP) is the second largest organization that directly deals with MPLBA. This intergovernmental environmental organization for the South Asia region is registered as a multilateral organization in accordance with Article 102 of the UN Charter.[34] The primary

[30] UN, 'Global Plan of Action (GPA)' <https://www.unep.org/explore-topics/oceans-seas/what-we-do/working-regional-seas/partners/global-plan-action-gpa> accessed 29 April 2023

[31] The Arctic, Black Sea, Caribbean, Caspian, East Africa, East Asia, Mediterranean, Northeast Atlantic, Northeast Pacific, Northwest Pacific, Red Sea and Gulf of Aden, ROPME Sea Area, South Asian Seas, Southeast Pacific, South Pacific and West and Central Africa.

[32] Somrudee Nicro and Christine Apikul, 'Environmental Governance in Asia' (2001) Institute for Global Environmental Strategies, p. 123 <http://www.jstor.com/stable/resrep00840.6>

[33] Press Release, Ministry of Foreign Affairs <https://mofa.gov.bd/site/press_release/6485e72d-e749-41e1-8594-f9da2206ca66> accessed 2 March 2024

[34] SACEP, Fast Facts about SACEP <http://www.sacep.org/pdf/Fast-Facts-of-SACEP.pdf>

function of SACEP is to promote South Asia in the field of environment and on issues of economic and social development that impinge on the environment. As a founding member of SACEP, Bangladesh is working alongside the other member countries, namely: Afghanistan, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

Since 1983, SACEP has served as the secretariat for the South Asian Seas Program, which comes under the umbrella of UNEP Regional Seas Program.[35] During 39 years of its existence, SACEP in collaboration with various partner organisations has implemented a number of programs which are relevant to MPLBA concerns, such as: climate change, conservation of coastal and marine environment, environmental education, environmental law and waste management.

As a part of SACEP two different projects had started. The first one was the South Asian Seas Program (SASP). It was adopted in March 1995 and today enjoys the unqualified support of the region's five countries: Bangladesh, India, Maldives, Pakistan and Sri Lanka. The second project was titled Plastic free Rivers and Seas for South Asia Project. The Project Development Objective (PDO) of this project is to catalyze actions that reduce the flow of plastic pollution into South Asian Seas. It consists of four main components totaling US$40 million from International Development Association that will be implemented over a period of five years in all member countries.

### C. *National MPLBA Regime:*

While it is tempting to consider only the Marine Environment related sector to be relevant in the MPLBA regime, the overlapping nature of the problem of MPLBA in fact makes each and every sector to be functioning in a cooperative manner to be necessary. Therefore, quite a few major institutions are currently responsible for carrying out conservation measures against MPLBA. Ocean governance is a vast sector and the institutional arrangements for ocean governance in Bangladesh has been classified in the following divisions:[36]

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accessed 12 January 2024

[35] SACEP, About Us <http://www.sacep.org/what-we-do> accessed 12 January 2024

[36] Daud Hassan and Ashraful Alam, 'Institutional Arrangements for the Blue Economy: Marine Spatial Planning a Way Forward' (2019) 6(2) Journal of Ocean and Coastal Economics, DOI: 10.15351/2373-8456.1107.

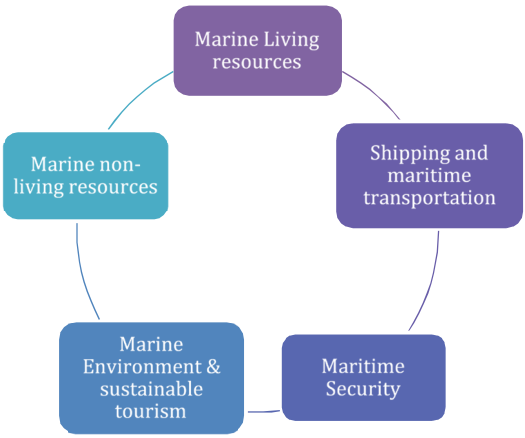


**Figure 4**: Maritime Governance Sectors in Bangladesh

The national institutions working in each of these sectors is mentioned below:

| Marine Living resources | Marine Non-Living Resources | Marine Environment and Sustainable Tourism | Maritime Security | Shipping and Maritime Transportation |
|---|---|---|---|---|
| Department of Fisheries | Energy and Mineral Resources Division | Ministry of Environment, Forests and Climate Change, Ministry of Foreign Affairs | Bangladesh Coast Guard | Department of Shipping |
| Marine Fisheries Academy | Sustainable and Renewable Energy Development Authority | Department of Environment | Bangladesh Navy | Mercantile Marine Department |

| | | | | |
|---|---|---|---|---|
| Bangladesh Fisheries Research Institute<br><br>Bangladesh Fisheries Development Corporation | Petrobangla | Bangladesh Climate Change Trust | Bangladesh Space Research and Remote Sensing Organization (SPARRSO) | Government Shipping Office |
| Fisheries and Livestock Information Office | Geological Survey of Bangladesh | Bangladesh Tourism Board | Bangladesh Meteorological Department | Seamen Welfare Directorate & Emigration Directorate |
| | Bangladesh Hydrocarbon Unit | Bangladesh Porjoton Corporation | Survey of Bangladesh | Bangladesh Shipping Corporation |
| | Bangladesh Energy Regulatory Commission (BERC) | | | Marine Academy |
| | | | | National Maritime Institution |
| | | | | Chittagong Port Authority |
| | | | | Mongla Port Authority |
| | | | | Payra Port Authority |

**Table 3**: Institutional Framework under MPLBA regime of Bangladesh

The involvement of all these national authorities explains the fact that a solid institutional framework exists in Bangladesh that can contain the spread of MPLBA. It has been suggested that, reducing land-based pollution through imposing proper regulations and recycling of waste materials can reduce marine pollution in Bangladesh.[37] Some of the major legislation and policy documents which inherently address the various problems causing MPLBA in Bangladesh are listed below:

[37] Jatish Chandra Biswas, M. M. Haque, Md. Maniruzzaman, Sh Akhtar, Naveen Kalra, 'Coastal and Marine Pollution in Bangladesh: Pathways, Hotspots and Adaptation Strategies' (2021) 2(4) EJEES <https://www.ej-geo.org/index.php/ejgeo/article/view/133/84> accessed 16 March 2024

| Relevant Legal and Policy Documents | Major Land-based Activities leading to Marine Pollution |
|---|---|
| Environmental Policy, 2018 | Industrial waste, solid waste, salinity intrusion, deforestation, rapid urbanization, unplanned extraction of coastal resources, coastal tourism, agrochemicals, Persistent organic pollutants |
| Territorial Waters and Maritime Zones Act (TW&MZAA), 1974 | Plastic pollution, Atmospheric pollution, Land-based sources of pollution |
| Bangladesh Environment Conservation Act, 1995 | Industrial waste, Solid waste, Plastic pollution, deforestation, rapid urbanization, Unplanned extraction of coastal resources, Agrochemicals, Persistent organic pollutants |
| Bangladesh Environment Conservation Rules, 1997 | Industrial waste, solid waste, salinity intrusion, rapid urbanization, coastal tourism, agrochemicals, Persistent organic pollutants |
| Integrated Coastal Zone Management Plan (2002-2005) | Industrial waste, solid waste, deforestation, salinity intrusion, rapid urbanization, unplanned extraction of coastal resources, coastal tourism, erosion, agrochemicals, Persistent organic pollutants |
| Coastal Development Strategy, 2006 | Industrial waste, solid waste, deforestation, salinity intrusion, rapid urbanisation, unplanned extraction of coastal resources, erosion, coastal tourism, agrochemicals, Persistent organic pollutants |
| National Forest Policy, 1994 | Deforestation, rapid urbanisation |
| National Fisheries Policy, 1998 | Agrochemicals, Persistent organic pollutants, deforestation, |
| National Agriculture Policy, 1999 | Agrochemicals, Persistent organic pollutants, deforestation, salinity intrusion, |
| EIA Guideline for Industries, 1997 | Industrial waste |
| Marine Pollution Ordinance, 1977 | Industrial waste |
| Inland Shipping Ordinance, 1976 | Industrial waste |
| Chittagong Port Ordinance, 1976 | Solid waste |
| Chittagong Metropolitan Master Plan | Industrial waste |

| | |
|---|---|
| National Integrated Pest Management Policy, 2002 | Agrochemicals, Persistent organic pollutants |
| Pesticides Rules, 1985 | Agrochemicals, Persistent organic pollutants |
| Mine and Mineral Resources (Control and Development) Act, 1992 | Unplanned extraction of coastal resources |
| Medical Waste Management Rules, 2008 | Solid waste |
| National 3R Strategy, 2010 | Solid waste |
| Bangladesh Standards and Guidelines for Sludge Management, 2015 | Industrial waste, Solid waste |
| Bangladesh Climate Change Strategy and Action Plan, 2010 | Climate Change |
| Bangladesh Delta Plan 2100 | Climate Change, Industrial waste, Solid waste, Salinity intrusion |

**Table 4**: Legal and Policy Instruments regulating MPLBA regime in Bangladesh

This table clearly depicts that there is no dearth of legal instruments when it comes to regulation purposes. However, it is necessary to focus on the emerging issues in order to keep up with the developments at international scale.

**4. How effective is the Bangladeshi MPLBA Legal Regime?**

Among the above-mentioned national legislations and policies covering important aspects of ocean governance and pollution control, two legislations have made their mark in impacting actions to combat MPLBA. The first legislation is the Bangladesh Environment Conservation Act (BECA), 1995 and the second one is the Territorial Waters and Maritime Zones Act, 1974. In addition, the Bangladesh Delta Plan 2100 as a unique policy document has certain importance. Finally, the National Program of Action (NPA) is analyzed in this section. Among the dozens of relevant legislative and policy documents, specifically these have been selected for ensuring an in-depth discussion. The possible role and efficacy of these instruments in regulating MPLBA is discussed below:

i) Bangladesh Environment Conservation Act and Rules:

In pursuance of the principles settled in the RIO summit of 1992, the Bangladesh Environment Conservation Act (BECA) came into force in 1995 repealing the earlier Environmental Pollution Control Ordinance of 1977. It is currently the flagship legislation relating to environmental protection in Bangladesh. In the ambitious scope of BECA, many modern strategies have been

included in order to provide for conservation of the environment, improvement of environmental standards and control and mitigation of environmental pollution.

One great achievement of the BECA lies in the introduction of the provision for Environment Clearance Certificate (ECC) in Bangladesh. Every industrial unit or project has to be established or undertaken after obtaining an Environmental Clearance Certificate from the DG[38] which ensures the control and mitigation of industrial pollution. After the promulgation of Bangladesh Environment Conservation Rules 2023, the provisions relating to ECC have been reviewed.[39] In consideration of their site and impact on the environment, the industrial units and projects have been classified into four categories. The least harmful industries are placed in the Green category, the industries having increasing effects are categorised in Yellow, Orange and Red Category.[40] The MPLBA contaminants illustrated in Table 1 are therefore mostly regulated under this Act.

However, in truth, improper disposal of solid wastes from industry and household in violation of this law is rampant and there is a lack of public awareness about the impacts of land-based marine pollution.[41] The legal requirement of establishing effluent treatment plants (ETP) under this legislation[42] is hardly adhered to.[43] Even the industries which have established ETPs, regularly avoid using those to reduce expense and achieve high profit goal.[44] As a result, the major rivers of Bangladesh have become so heavily polluted that the river water is toxic with heavy metals; especially Pb and Cr, while most of these river sediments are polluted with Fe, Zn, Cu, Pb, Cd, Ni, Mn and Cr going above the threshold value.[45] The destination of all such pollution is ultimately the Bay of Bengal through the

[38] Section 12, Bangladesh Environment Conservation Act 1995

[39] DoE, Bangladesh Environment Conservation Rules 2023 <https://doe.portal.gov.bd/site/page/34032b57-86f1-4740-8316-269b004743ae>

[40] Rule 5, Bangladesh Environment Conservation Rules 2023

[41] Md. Wahidul Alam, Xu Xiangmin, Raiyan Ahamed, 'Protecting the marine and coastal water from land-based sources of pollution in the northern Bay of Bengal: A legal analysis for implementing a national comprehensive act' (2021) Environmental Challenges 4 <https://www.sciencedirect.com/science/article/pii/S2667010021001335> accessed 1 March 2024

[42] Schedule 12 under Rule 33 of the Bangladesh Environment Conservation Rules 2023

[43] Md. Helal Uddin, Md. Shahidul Islam, Aftab Mahmood Ayas, 'A Study on Efficiency of Effluent Treatment Plants and Threat to Public Health in Context of Bangladesh' (2018) IRJPMS <https://www.researchgate.net/publication/353689726_A_Study_on_Efficiency_of_Effluent_Treatment_Plants_and_Threat_to_Public_Health_in_Context_of_Bangladesh> accessed 3 March 2024

[44] Md. Jamal Uddin, Yeon-Koo Jeong, 'Urban River pollution in Bangladesh during last 40 years: potential public health and ecological risk, present policy, and future prospects toward smart water management' (2021) 7 Heliyon <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7892934/pdf/main.pdf> accessed 12 February 2024

45 ibid, p. 18

Meghna River leading to MPLBA.[46]

Another important role played by the BECA is regarding plastic pollution that accelerates MPLBA. By dint of its amended Section 6A, the GoB has imposed an absolute ban on manufacturing, production, display, marketing and sale of polythene shopping bags. However, subsequent exceptions ease this ban and allows for polythene bags with more than 55 microns in thickness to remain in market.[47] This section is hardly being implemented, and Bangladesh is producing about 3000 t $day^{-1}$ plastic waste which moves toward the sea.[48] One of the reasons for such non-compliance is the existing barriers in Bangladesh toward achieving environmental justice. The environmental offences enumerated into this Act are supposed to be penalized under the Environment Courts set up under the Environment Court Act, 2010[49] and Mobile Court Act 2009.[50] However, these courts and tribunals have done less well in facilitating the citizens to participate in decision-making process or offering new mew means to resolve environmental disputes justly and efficiently.[51] Therefore, the legal measures to control MPLBA under the BECA are not yet sufficient.

ii) Territorial Waters and Maritime Zones Act:

The second legislation with serious implication for combating marine pollution in Bangladesh was enacted in 1974. With only nine sections, the Territorial Waters and Maritime Zones Act (TW&MZAA) of Bangladesh was enacted as the twenty-sixth legislation of 1974. A thorough amendment of this legislation had been undertaken in 2021, which has introduced a new perspective about marine pollution in Bangladesh. It includes a comprehensive legal definition of marine pollution, dumping of wastes and ocean governance as a whole. With the aim of controlling marine pollution, Section 8 of this amended legislation prescribes that the Government may, with a view to sustainably managing, preserving and protecting marine and coastal ecosystems, through preventing and controlling marine pollution, take such measures as it may deem fit and proper. It

[46] Jatish Chandra Biswas, Md. Mozammel Haque, Md. Maniruzzaman, Sh Akhtar and Naveen Kalra, 'Coastal and Marine Pollution in Bangladesh: Pathways Hotspots and Adaptation Strategies' (2021) EJEES <https://www.ej-geo.org/index.php/ejgeo/article/view/133> accessed 10 January 2024

[47] Md. Nazrul Islam, 'Banning Polythene: An Analysis of the Efficiency of the Legal Regime' (2004) XV (2) The Dhaka University Studies, 6-9

[48] Jatish Chandra Biswas, Md. Mozammel Haque, Md. Maniruzzaman, Sh Akhtar and Naveen Kalra, 'Coastal and Marine Pollution in Bangladesh: Pathways Hotspots and Adaptation Strategies' (2021) EJEES <https://www.ej-geo.org/index.php/ejgeo/article/view/133> accessed 10 January 2024, 29

[49] Section 2(c) of the Environment Court Act 2010

[50] Section 6 and Article 70 of the Schedule of the Mobile Court Act 2009

[51] Preeti Kana Sikder, 'Achieving Environmental Justice in Bangladesh: Impediments and Prospects' XXIV CUJL (2019)

also allows the Government to make rules with a view to preserving the quality and ecological balance in the marine environment in the Maritime Zones under jurisdiction to prevent, reduce and control pollutions from land-based sources.[52]

Section 22 of this Act provides for possible punishment of imprisonment which may extend to 3 (three) years, or with fine shall not be less than taka 2 (two) crore which may extend to taka 5 (five) crore, or with both for convicted polluters. Section 23 covers the punishable act of pollution caused by foreign vessel or installation with imprisonment for a term which may extend to 5 (five) years, or with fine shall not be less than taka 10 (ten) crore which may extend to taka 20 (twenty) crore or with both. This legislation also proposes establishment of maritime tribunals under Section 27 to be formed by a District Judge or Additional District Judge appointed by the Government in consultation with the Supreme Court.

Section 28 of TW&MZAA allows the Government to confer on any gazetted officer of Bangladesh Navy or Bangladesh Coast Guard the power to arrest of any person and to investigate the offences enumerated, including the offence of marine pollution. Section 29 broadens the scope for admissibility of digital evidence by including videos, photos or tapes or disks or satellite images as evidence in the trial on proof of authenticity. However, Section 30 limits access to justice by enumerating that the Tribunal shall not take cognizance of an offence without the written complaint made by any person authorized by the Government in this behalf.

After three years of enactment, such promises of MPLBA control enumerated in this legislation are yet to be fulfilled. There are no rules yet made under Section 8(2)(b) that can prevent, reduce and control pollutions from land-based sources in the BoB. Moreover, the exemplary power to penalize punishable offences of polluting the marine environment53 and failure to take measures to prevent pollution in such areas54 remain inapplicable with absence of Maritime Tribunals. Therefore, the legislation still fails to fully account for the impending challenge of climate change, marine and maritime pollution.55

iii) Bangladesh Delta Plan:

Among the latest national policy documents, the most relevant role in reducing

[52] Section 2(b) of TW&MZA

[53] Section 22 of TW&MZA

[54] Section 23 of TW&MZA

[55] C.A.M. Al Wahi, Md. Al Mehedi Hasan Talukder, Abue Jawfore Taufique Ahamed Ahade, 'Territorial Waters and Maritime Zones (Amendment) Act, 2021: An In-Depth Analysis and Overview' (2024) BMJ <https://bmj.bsmrmu.edu.bd/details&cid=108> accessed 2 March 2024, p. 221

MPLBA can be played by the Bangladesh Delta Plan 2100. The GoB began formulation of this plan in 2012 and in its final version, the first volume contains the strategy, second volume presents the investment plan and there are 26 Baseline Studies along with an Inception Report.[56] Due to the claim of a long-term, holistic and 'no-regret' approach taken in this voluminous document[57], the inland and marine water systems both are areas of primary focus discussed under it. This century-long plan identifies four major challenges faced by our delta; a) climate change, b) upstream development activities, c) water quality and d) waterlogging.[58] Among these challenges, the concern for MPLBA easily falls into the challenge of water quality. For example, in Bangladesh, textile and dyeing industry discharge 12.7–13.5 million $m^3$ waste waters annually and pollute 20% of freshwater, all of which ultimately runs to the sea.[59] Therefore, by an integrated assessment of the issue of fresh water pollution is integral to reduce MPLBA. To address these challenges there are three types of strategies undertaken through this plan as illustrated below:

| Strategy at National Level | Hotspot Specific Strategies | Strategies for Cross-cutting Issues |
|---|---|---|
| •Flood Risk Management<br>•Fresh Water Strategies | •Coastal zone<br>•Barind and Drought-prone areas<br>•Haor & Flash flood areas<br>•Chattogram Hill Tracts<br>•River systems and Estuaries<br>•Urban areas | •Sustainable land use and Spatial planning<br>•Agriculture, Food Security, Nutrition & Livelihoods<br>•Transboundary Water Management<br>•Dynamising Inland Water Transport System<br>•Advancing the Blue Economy<br>•Renewable Energy<br>•Earthquakes |

**Table 5:** Strategies of Bangladesh Delta Plan 2100

Among these strategies, there is an overlapping relation to MPLBA concerns. To identify an affected area, both the coastal zone and Chattogram Hill Tracts fall under relevant consideration for MPLBA issues under the Hotspot Specific Strategies. However, it is already established that initiation of MPLBA is not necessarily confined within the marine areas. Hence, all strategies targeted at improving the environmental condition of River systems and Estuaries and Urban

[56] S. Nazrul Islam, *A Review of Bangladesh Delta Plan 2100* (Eastern Academic, 1st edn, UPL, 2022)

[57] BDP 2100 (Abridged Version) p. 5

[58] BDP 2100 (Abridged Version) p. 8

[59] Jatish Chandra Biswas, M. M. Haque, Md. Maniruzzaman, Sh Akhtar, Naveen Kalra, 'Coastal and Marine Pollution in Bangladesh: Pathways, Hotspots and Adaptation Strategies' (2021) 2(4) EJEES <https://www.ej-geo.org/index.php/ejgeo/article/view/133/84> accessed 16 March 2024

areas will reduce MPLBA too. In addition, any pollution control measures taken under the Fresh Water Strategies (National Level) can clearly serve the purpose of reducing toxic wastes being dumped into the BoB. Moreover, by improving the inland water transport system and agricultural methods in protecting nature, the Cross-cutting strategies can also contribute toward addressing MPLBA. Last but not the least, in advancing Blue Economy, BDP 2100 aims at keeping the coasts and sea ports pollution free.[60] Moreover, the Investment Plan presented in Volume 2 of the BDP 2100 offers eighty projects for implementation during 2020-2040.[61] Among these only the following Delta Plan projects[62] show direct connection to MPLBA control measures to some extent:

| Project Name | Project Description | Strategic Area | Budget in million |
|---|---|---|---|
| Integrated Coastal Zone Land Use Planning using GIS and RS Technology | Promote 'Action area' focused development for specific areas such as: ports, islands and ecologically sensitive areas. | Coastal Zone | BDT 899<br>$11 |
| Improvement of sanitation system in city corporation areas of Bangladesh | Improve the sanitation system, Sewerage treatment plant and sufficient sewer line is needed to carry and for treatment of household sewerage | Urban Areas | BDT 23,400<br>$295 |
| Protection of River System around Dhaka City with their ecological restoration | Ensure zero discharge of effluent into the rivers, canals, water bodies and paddy fields; Clean hazardous and toxic deposits from river beds; Environmental disposal of dredged materials; Promote green growth; Improve water quality of rivers; Stop disposal of solid and liquid wastes into rivers; Create a watchdog against polluters. | Urban Areas | BDT 14,788<br>$186 |
| Water supply and environmental sanitation in Pourashavas under CHT | Ensure a proper sanitation system for sustainable environment; Ensure proper drainage facilities and improve solid waste management system | Chittagong Hill Tracts | BDT 5,433<br>$68 |

[60] BDP 2100 (Abridged Version) 25

[61] S. Nazrul Islam, *A Review of Bangladesh Delta Plan 2100* (Eastern Academic, 1st edn, UPL, 2022) 82

[62] BDP 2100, Volume 2 (Investment Plan, Part 1) 14-18

| | | | |
|---|---|---|---|
| Improvement of urban drainage in district and upazila level municipalities | Improve urban drainage and water harvesting system and urban ecological zones in nearly 200 urban centers | Cross-cutting | BDT 157,650<br>$1986 |
| Revitalisation of *Khals* | Increase the conveyance capacity of the *khals*; Produce an environmentally safe water flow | Cross-cutting | BDT 4,577<br>$58 |

**Table 6:** Delta Plan Projects relevant to combating MPLBA

As inclusive and holistic as the overall strategies seem, the Delta Plan projects that ultimately implement these steps fall short in adequately achieving the goal of reducing MPLBA. A mismatch occurs between the century-long time frame and the much shorter time range of the projects included in the Investment Plan as the maximum time range for project stretches only up to 2040.[63] Moreover, within the total investment of $36,813 million, only $2604 million can be considered available for mobilizing resources to control MPLBA in the Bangladeshi delta.[64] Also, it is a matter of concern that while this plan includes strategies to advance blue economy, the steps described to be undertaken so[65], does not indicate any plan to control dumping of wastes from upstream flow into the BoB. While scholars often suggest that, any long-term vision for blue economy development should develop in concentration with all stakeholders and include not only protection of marine and coastal ecosystem but also reduction of both inland and marine pollution.[66] Bangladesh also bears much of the brunt of transboundary plastic waste flow causing marine pollution being at the lower riparian of both China and India.[67] However, the strategies for transboundary water management in this plan is not focusing on this problem. For a 'techno-economic' integrated plan like the BDP, therefore, the level of efficacy in managing the MPLBA problem remains

[63] S. Nazrul Islam, *A Review of Bangladesh Delta Plan 2100* (Eastern Academic, 1st edn, UPL, 2022) 81

[64] Estimated total budget from Table 6

[65] Strategies for Blue Economy in BDP include: Quick completion of multidimensional survey of marine resources; Increase the number of sea going vessels and modernisation and capacity building of the sea ports; Increase both shallow and deep sea fishing; Introduction of eco-tourism and private sector initiatives in sea cruise; and Keeping the coasts and sea port pollution free.

[66] Pierre Failler et al, 'The Future of Blue Economy in Bangladesh' (2021) BMJ <https://bsmrmu.edu.bd/public/files/econtents/61909bb50be2aMS%20-%201%20A.pdf> accessed 11 January 2024

[67] Atiq Rahman, 'Challenges and opportunities of plastic pollution management' *The Daily Star* (Dhaka 12 February 2020) <https://www.thedailystar.net/supplements/29th-anniversary-supplements/governance-development-and-sustainable-bangladesh/news/challenges-and-opportunities-plastic-pollution> accessed 1 February 2024

unsatisfactory.

iv) National Programme of Action (NPA) under the GPA:

Even though compliance to GPA is voluntary, Bangladesh needs to lead the way in adhering to the international standards in order to ensure survival of its people. Global warming and climate change are already leaving their mark in our yearly disaster lists, and they are getting more severe. Among all the coastal states, Bangladesh has a lot to lose from the severity of MPLBA. As the GPA is silent about climate change, the role of the GPA in studying and addressing climate change impacts on coastal and freshwater ecosystems remains uncertain.[68] The effective prevention of marine pollution demands measures that go beyond a narrow sectoral focus.[69] The implementation of the GPA at national level is primarily the task of governments in close partnership with all stakeholders, including international and public organisations, local communities, non-governmental organisations, and the private sector.[70]

Bangladesh has incorporated this critical issue into the NPA and left an exemplary role. It is true that NPA is a core document in guiding the MPLBA legal regime of Bangladesh. However, the mechanism that was adopted under this document back in 2006 requires some heavy updates concerning the alteration of consumption patterns and other development activities in Bangladesh. During the development of the NPA for Bangladesh, mistakes were made due to relying solely on secondary sources, which resulted in a lack of scientific guidance and methodology. Key issues identified for national action under the NPA were: Industrial waste, Sewage disposal, Solid waste management, Agrochemicals/PoPs, Deforestation, Salinity intrusion, Rapid urbanization, Erosion in the coastal zone, Unplanned extraction of coastal resources (Gas, oil and minerals, Sustainable Shrimp Farming, Coastal fishing and Fish processing), Coastal tourism, Change in the land use pattern, and Climate Change.[71] Even though these issues are yet to be resolved, there is need for an update.

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[68] David L. VanderZwaag an Ann Powers, The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance, The International Journal of Marine and Coastal Law 23 (2008) 423–452

[69] Caroline Williams, 'Combatting marine pollution from land-based activities: Australian initiatives' (1966) 33(1-3) Ocean & Coastal Management 87

[70] UNEP, 'Oceans and Seas' <https://www.unep.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/global-partnership-marine> accessed 29 April 2023.

[71] Department of Environment, Bangladesh Programme of Action for Protection of the Marine Environment from Land-based Activities (2006) <https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/publications/2686e3bc_b152_44fb_964b_1746bc42092d/NPA%20Final%20Draft%20(1).pdf> accessed 12 December 2024, pp. 8-24

As the third IGR meeting of the GPA has provided latest scientific input as to the most concerning pollutants causing MPLBA worldwide, the measures undertaken in Bangladesh need to be in line with such information. The latest policy level collaborations regarding MPLBA are being taken regarding the following issues: Marine litter[72], Global Wastewater Initiative (GW²I)[73], Coral Reef Management and Global Partnership on Nutrient Management.[74] None of these initiatives are present in the 2006 NPA of Bangladesh. Hence, it will not be possible to maintain international standard of application if the most urgent scientific concerns are left behind. The above-mentioned analysis proves that the measures to stop MPLBA demands long-term, cross-sectoral, multi-disciplinary, and participatory responses.

## 5. Conclusion

Scientists have repeatedly affirmed that the marine environment is extremely delicate and human lives depend on its well-being.[75] In truth, such widespread act of marine pollution is at the core of all environmental polluting activities. Emphasising upon the importance of combating marine pollution, Cousteau noted in his famous New York Times article: *'... in publications, in conferences, in international units, matters are generally divided into air pollution, land pollution and water pollution. In fact, there is only one pollution because every single thing, every single chemical, whether in the air or on land will end up in the ocean.'*[76] Yet the oceans of the world have been treated as the go-to waste dumping ground for humankind since time immemorial.

It is undeniable that the area of Bay of Bengal under Bangladesh's territory provides the whole country with numerous opportunities and hope for a sustainable future. As a result, it is imperative to consider the possible ways to combat marine pollution effectively. The challenges constraining effective protection of the marine environment from land-based pollution and activities are common

[72] UNEP, 'Oceans and Seas' <https://www.unep.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/global-partnership-marine> accessed 29 April 2023.

[73] UNEP, Addressing Land based pollution, Global Wastewater Initiative <https://www.unep.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/global-wastewater-initiative> accessed 20 June 2024

[74] UNEP, 'Global Partnership on Nutrient Management' <https://www.unep.org/explore-topics/oceans-seas/what-we-do/addressing-land-based-pollution/global-partnership-nutrient> accessed 29 April 2023.

[75] Josep Lloret, Alfredo Garcia-de-Vinuesa, Montserrat Demestre, 'How human health and well-being depends on healthy marine habitats in the Mediterranean: A review' (2024) 10 Heliyon <https://www.sciencedirect.com/science/article/pii/S2405844024003608> accessed 12 February 2024

[76] Jacques Cousteau, 'Our Oceans are Dying' (1971) <https://www.nytimes.com/1971/11/14/archives/our-oceans-are-dying.html> accessed 10 January 2025

to many areas of environmental governance. Those challenges include, among others: poverty, lack of public education and awareness, limited individual and political wills to take pollution and environmental degradation seriously, over-consumption and materialistic mindsets, limited financial and human resources, fragmented legal and institutional arrangements, and lack of effective compliance and enforcement.[77]

Many jurisdictions of the world have put forward inspiring examples for Bangladesh to follow the protection of the marine environment techniques. Bangladesh may translate many of these experiences to combat marine environment degradation. The existing MPLBA legal regime should deliver what it has promised. Efficient implementation of measures is necessary now to establish an effective regional and global network aimed at protecting the marine environment.

There is ample modern evidence that the oceans cannot serve as an infinite sink for wastes because the ocean's capacity to assimilate human discharges and wastes is both limited and quantifiable.[78] This paper identifies that degradation of the marine and coastal environment can result from a range of separate anthropogenic sources.[79] There is also consensus that land-based sources of marine pollution are not adequately addressed in field level and further serious degradation of the marine environment will occur without concerted new action. A precautionary and anticipatory rather than a reactive approach is therefore necessary to prevent the further degradation of the coastal and marine environments of Bangladesh. While the marine resources and environment of Bangladesh requires more attention from the administrative and legislative sectors, it clearly does not require more legislation to be enacted. Rather the existing legal provisions need to be updated and implemented in a realistic manner. Adhering to the above-mentioned suggestions, it might become possible to address the MPLBA problem in a holistic way without putting more energy and money into drafting new legislations which already are covered under different previously enacted laws.

The MPLBA issue is not only legal but also scientific, as such, interdisciplinary approach is required to address the problems associated to it. Any ideal legal framework should incorporate the scientific considerations in this regard. As a functional MPLBA regime require integration of social and economic

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[77] David L. VanderZwaag and Ann Powers, 'The Protection of the Marine Environment from Land-Based Pollution and Activities: Gauging the Tides of Global and Regional Governance' (2008) 23 The International Journal of Marine and Coastal Law 423-452.

[78] Judith Schali, *The Mitigation of Marine Plastic Pollution in International Law: Facts, Policy and Legal Implications* (1st edn, Brill Nijhoff, 2022) p. 109

[79] Table 1 describes the MPLBA contaminants.

components along with environmental components,[80] only action-oriented nature of obligations will not suffice. The relationship between emissions, impacts and responses needs to be more concrete.[81]

In the light of the current global crisis, it is necessary to take note of the alarming state the MPLBA problems are heading to. Bangladesh and its citizens, who rely heavily on the services of the oceans can no longer take the issue of MPLBA lightly. In fact, measures aimed at curbing pollution of the sea resulting from land-based activities are seen as the principal means of achieving a healthy status of the marine environment around the world.[82]

Therefore, it is imperative that the research and development relating to MPLBA in BoB advances accordingly. It is absolutely urgent for Bangladesh to educate its people about the grave impacts of MPLBA on their daily lives. For that purpose, it is essential to strengthen the educational sector of Bangladesh. Curriculums at educational institutions must accommodate lessons about health of the marine ecosystems. Side-by-side the policymakers should ensure full-proof implementation of the laws already regulating the harmful polluting activities. By addressing the MPLBA problem in a holistic way, without putting more energy and money into drafting new legislations, the Bangladeshi legal regime can successfully address the MPLBA problem.

[80] Department of Environment, Bangladesh Programme of Action for Protection of the Marine Environment from Land-based Activities (2006), p. 8, available at: https://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/publications/2686e3bc_b152_44fb_964b_1746bc42092d/NPA%20Final%20Draft%20(1).pdf.

[81] Elizabeth A Kirk, 'Noncompliance and the Development of Regimes Addressing Marine Pollution from Land-Based Activities' (2008) 39 Ocean Development & International Law 235.

[82] UNEP, *Implementation of the GPA at regional level: The role of regional seas conventions and their protocols* (2018)