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The “blue community” of the Indian Ocean: cooperation, challenges and prospects for marine environmental protection among South Asian countries

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The five South Asian countries surrounding the northern edge of the Indian Ocean — India, Pakistan, Bangladesh, Sri Lanka and the Maldives — boast diverse marine ecosystems ranging from mangrove deltas to coral atolls. The establishment of binding legal obligations for marine environmental protection has made safeguarding marine ecosystems one of the core issues in the global governance system. Taking a legal and institutional approach, this article analyses the main content and characteristics of the marine environmental protection systems of five South Asian countries. Through text analysis, comparative legal research and case evaluation, it aims to answer three key questions: (1) The degree to which current domestic laws in South Asian coastal countries align with international marine environmental norms. (2) The existing regional cooperation mechanisms and interaction models for marine environmental protection in South Asian coastal countries, based on principles of international law and global best practices. (3) There are structural and enforcement bottlenecks in the legal mechanisms for marine environmental protection and cooperation among South Asian countries. The findings indicate that despite certain advancements, significant challenges remain in building a “blue community” in the Indian Ocean region.

KEYWORDS

marine environmental protection, South Asian countries, blue community, transboundary marine pollution control, cooperation mechanisms

1 Introduction

South Asian countries have long focused on marine environmental protection issues along the northern coast of the Indian Ocean. In recent years, the over-exploitation of resources, pollution, and degradation to coastal ecosystems have put immense pressure on the Indian Ocean’s marine environment. In response, India, Pakistan, Bangladesh, Sri

Lanka, and the Maldives have introduced numerous laws and regulations aimed at safeguarding the marine environment. In addition to national efforts, regional cooperation is important for addressing cross-border issues. Mechanisms such as the environmental cooperation framework under the South Asian Association for Regional Cooperation (SAARC) and the South Asian Cooperation on Environment Program (SACEP) have been established.

An examination of environmental cooperation in South Asia reveals persistent internal and external divides. First, South Asia has many internal conflicts, and there is a lack of mutual trust among its members. The most significant issue in South Asia is the long-standing and deeply rooted historical, territorial, and religious conflicts between India and Pakistan, which are difficult to resolve. India's relations with other regional countries are often strained as well, and the lack of mutual trust undermines the momentum of the South Asian Association for Regional Cooperation (SAARC), which naturally affects regional environmental cooperation. Second, South Asia lags behind in economic development, and the contradiction between economic growth and environmental protection is particularly acute. The region has limited resources for environmental protection, including funding, technology, and capacity building. Third, South Asia lacks strong leadership in environmental governance. India is the most influential country in the region. However, it faces significant internal challenges and has limited resources for foreign aid. Consequently, India can only provide a limited amount of regional public goods. Taken together, these factors constrain the formation and maturation of the Indian Ocean "Blue Community" and make the path to marine environmental protection in South Asian countries both complex and arduous. In this study, the 'Blue Community' refers to a cooperative framework in which Indian Ocean littoral and island states jointly manage, govern, and protect maritime resources under the principles of the blue economy. Beyond serving as a normative vision, the concept underscores the importance of balancing ecological sustainability with economic development, while fostering trust-building and collective action among South Asian countries. Moreover, it reflects broader trends in global ocean governance, where regional initiatives are increasingly seen as essential complements to multilateral frameworks such as UNCLOS and the BBNJ Agreement.

2 The legal and policy framework for marine environmental protection in South Asian coastal countries

2.1 India

With 7,500 kilometers of coastline and an exclusive economic zone exceeding 2.3 million square kilometers, India is a country with significant marine resources. The country has established a relatively comprehensive legal and policy framework for marine environmental protection, covering areas such as marine pollution control, biodiversity conservation and coastal zone management. The

earliest of India's marine environmental regulations traces back to The Water (Prevention and Control of Pollution) Act, 1974 (Government of India, 1974). This Act established central and state-level pollution control boards authorized to regulate pollution in all water bodies, including the ocean (Water Act, 1974, Sec. 3–4). Building on this foundation, Environment (Protection) Act, 1986 is a comprehensive environmental framework law which provides the institutional basis for the central government to issue environmental quality standards and pollution control measures (Environment Protection Act, 1986, Sec. 3–6) (Government of India, 1986). This law has since been used to formulate special notifications and directives targeting marine pollution, coastal development and ecological conservation.

In terms of specific marine pollution control measures, India added provisions on ship emissions at sea to the Merchant Shipping Act, 1958 in order to fulfil its obligations under international environmental conventions and thereby incorporate the International Convention for the Prevention of Pollution from Ships (MARPOL) into its domestic legal system (Merchant Shipping Act, 1958, as amended) (Directorate General of Shipping (DGS), 1958). The Act empowers India's maritime regulatory authority to oversee and enforce penalties for ship emissions, playing a pivotal role in controlling pollution from shipping. The primary legislation governing coastal zone management in India is the Coastal Regulation Zone Notification of 1991, which has undergone several revisions, including significant amendments in 2011 and 2019. Issued under the authority of the Environmental Protection Act, this policy divides the coastal zone within 500 meters into several 'Coastal Regulation Zones' and sets development restrictions based on the ecological sensitivity and development pressure of each zone. For instance, construction activities are prohibited in CRZ-I zones (ecologically sensitive areas), whereas limited development is permitted in CRZ-II to CRZ-IV zones under certain conditions (Ministry of Environment, Forest and Climate Change (MoEFCC), 2019). This system legally establishes the priority of coastal protection and practically restricts the uncontrolled expansion of coastal cities and industrial layouts. While the CRZ system is forward-thinking in concept, its implementation still faces challenges, including weak local enforcement, inconsistent policy implementation standards and marginalized community interests.

Furthermore, the Indian government's recent promotion of the blue economy has led some coastal state governments to seek a balance between 'sustainable development' and 'development prioritization' which has further complicated CRZ regulation. In terms of biodiversity conservation, India enacted the Biological Diversity Act, 2002 to establish a three-tier management structure at national, state, and local levels to protect genetic resources and regulate their acquisition and benefit-sharing (Government of India, 2002). The Act also applies to marine ecosystems, particularly in the management of biodiversity hotspots such as coral reefs, mangroves, and intertidal zones.

India has designated over 30 marine protected areas (MPAs), including the Malvan MPA in Maharashtra and the coral reef protected area in the Andaman Islands, which cover the marine components of national parks and wildlife sanctuaries. Complementing these conservation measures, the National Centre

for Sustainable Coastal Management (NCSCM), under the Ministry of Environment, Forest and Climate Change (MoEF&CC), has launched the Coral Reef *in situ* Observation Network (CReON) programme to enhance long-term scientific monitoring of coral ecosystems. In parallel, NCSCM has carried out systematic mapping of India's coral reefs, documenting approximately 1,439 km² in line with the Coastal Regulation Zone (CRZ) Notifications of 2011 and 2019 (Ministry of Earth Sciences, 2024).

2.2 Pakistan

Pakistan has approximately 1,050 kilometers of coastline along the Arabian Sea, stretching across the coastal regions of the Sindh and Balochistan provinces. Its exclusive economic zone, which covers 240,000 square kilometers, boasts significant fisheries resources, mangrove ecosystems, and strategic ports, including Karachi Port and Gwadar Port. However, as marine activities increase, Pakistan's marine environment faces mounting challenges such as port pollution, industrial wastewater, plastic waste, illegal fishing, and coastal erosion. Despite these pressures, the country's legal and policy framework for marine environmental protection remains underdeveloped and suffers from weak enforcement.

Pakistan's environmental legal framework is based on the Pakistan Environmental Protection Act, 1997, which authorizes federal and provincial environmental protection agencies to establish standards, monitor pollution sources, and impose penalties (Government of Pakistan, 1997). The Act applies to all ecosystems, including the marine environment, and provides a legal basis for preventing water pollution, regulating waste emissions, and conducting environmental impact assessments. However, the law lacks detailed provisions targeting marine pollution, which limits its effectiveness in marine environmental protection efforts.

In terms of coastal and marine management, Pakistan has yet to pass a unified Coastal Zone Management Act. Currently, management responsibilities are divided among various departments and regulations, including the Ports Act, the Fisheries Act, and the Marine Navigation Safety Act (Ministry of Maritime Affairs, 2017). For instance, while the Fisheries Act grants provinces the authority to regulate local fisheries, it lacks systematic provisions for deep-sea fishing and ecological conservation (FAO, 2022). Furthermore, development plans for ports such as Gwadar and Karachi frequently prioritize economic interests, resulting in substantial shortcomings in environmental impact assessment (EIA) implementation and contributing to the degradation of marine ecosystems (Khawaja et al., 2018).

In fulfilling its international obligations, Pakistan has ratified a number of key global conventions related to the oceans. Pakistan is a party to more than 25 multilateral environmental agreements (MEAs), including four International Maritime Organization (IMO) conventions directly addressing environmental concerns in the shipping industry. Beyond this, it has acceded to thirteen additional binding IMO instruments that encompass wider socio-economic and governance dimensions. Altogether, Pakistan has

ratified at least 17 IMO conventions. These include the United Nations Convention on the Law of the Sea (UNCLOS), the International Convention for the Prevention of Pollution from Ships (MARPOL), the London Convention and its Protocol, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, as well as commitments under the United Nations Sustainable Development Goals (SDGs) (Sheikh and Hameed, 2024). On the domestic front, several policy and legal milestones have since been introduced, such as the 18th Amendment to the 1973 Constitution, the National Environmental Policy (2005), the National Climate Change Policy (2012), the Climate Change Act (2017), the National Disaster Risk Management Framework (2015), and the National Sustainable Development Strategy (2017).

Mangrove conservation is a highlight of Pakistan's marine ecological protection efforts. The mangrove wetlands around Karachi play a crucial role in urban flood prevention, carbon sequestration, and biodiversity conservation. The Pakistani government has collaborated with international institutions such as the World Bank and the IUCN to implement a series of mangrove restoration and wetland management projects in Sindh Province (IUCN Pakistan, 2023). This demonstrates that, with international support, Pakistan possesses the capacity and potential to advance localized marine environmental governance.

2.3 Sri Lanka

Sri Lanka, an island nation in the Indian Ocean, boasts over 1,600 kilometers of coastline. Its exclusive economic zone spans approximately 510,000 square kilometers. Marine resources play a pivotal role in the nation's food security, tourism industry, and economic growth. Sri Lanka is one of the world's marine biodiversity hotspots, with coastal and marine ecosystems encompassing coral reefs, mangroves, seagrass beds, and saline lagoons. However, plastic pollution, illegal fishing, overdevelopment, climate change, and oil spills (such as the 2021 "X-Press Pearl" cargo ship leak) threaten Sri Lanka's marine environment (Rodrigo, 2025). Against this backdrop, Sri Lanka has gradually established a comprehensive legal and policy framework for marine environmental protection, fisheries management, and pollution prevention.

The most significant environmental legislation in Sri Lanka is the National Environmental Act (No. 47 of 1980), which empowers the Central Environment Authority (CEA) to regulate environmental pollution, including marine pollution, and establishes an Environmental Impact Assessment (EIA) system (Central Environmental Authority of Sri Lanka, 1980). Under this law, all development projects that could affect coastal and marine environments must undergo environmental assessments and public consultations beforehand. This law is a crucial legal tool that enables Sri Lanka to control port expansions, tourism developments, and industrial emissions.

In the field of specialized marine law, the Coast Conservation and Coastal Resource Management Act (No. 57 of 1981) is a key piece of legislation. The Act established the Coast Conservation

Department (CCD) and designated the Coastal Zone as a controlled area extending from the coastline to the boundary between land and sea (Department of Coast Conservation and Coastal Resource Management, 1981). The CCD is responsible for regulating coastal development activities, formulating coastal land use plans, and promoting coastal ecological restoration. The CCD has also issued the National Coastal Resource Management Plan (NCRMP) to enhance community participation and climate resilience (Government of Sri Lanka, 2018).

Regarding marine biological resource management, Sri Lanka enforces the Fisheries and Aquatic Resources Act (No. 2 of 1996), which regulates commercial fishing, fishing moratoriums, restrictions on fishing gear, and vessel permits. The Act also authorizes the Ministry of Fisheries and Aquatic Resources to establish Marine Protected Areas (MPAs) (Ministry of Fisheries and Aquatic Resources, 1996). Sri Lanka has also designated several marine ecologically sensitive zones and national marine parks, such as Pigeon Island National Marine Park, to protect coral reefs and endangered species.

In the Sri Lankan context, the Blue Economy is viewed as a pathway to sustainable, inclusive, and low-carbon growth across both established and emerging industries. Realizing these goals, however, hinges on fostering innovation and technological adaptation. Owing to its strategic location in the Indian Ocean, adjacent to major East–West shipping lanes, Sri Lanka's port sector possesses considerable untapped potential, with projections suggesting its share of GDP could rise from the current 2.5% to around 6% by 2030 (Kumara, 2017). The fisheries industry, meanwhile, accounts for about 1.4% of GDP, while simultaneously ensuring national food security, supporting coastal livelihoods, and generating foreign exchange revenues. Strengthening this sector through targeted infrastructure investment and advanced technologies could enhance productivity and resilience, without eroding traditional practices.

2.4 Bangladesh

Located in the northern part of the Bay of Bengal, Bangladesh has approximately 710 kilometers of coastline and an exclusive economic zone (EEZ) of over 120,000 square kilometers. Its marine resources play a crucial role in the country's economic development, food security, and climate adaptation. Bangladesh has significant potential for development in fisheries, port transportation, marine energy, and the blue economy. However, the country's marine environment faces significant challenges due to dense coastal populations, uncontrolled industrial emissions, rampant illegal fishing, and severe plastic and oil pollution.

Bangladesh's primary environmental legislation is the Bangladesh Environment Conservation Act of 1995. This Act authorizes the Ministry of Environment, Forestry, and Climate Change (MoEFCC) and its subordinate Department of Environment (DoE) to oversee environmental pollution control, environmental impact assessments (EIA), the establishment of pollutant emission standards, and enforcement across all

environmental sectors, including the marine environment (Government of Bangladesh, 1995). Despite its broad scope, the Act lacks specific provisions for preventing marine pollution or protecting marine ecosystems.

In terms of fisheries resource management, the Government of Bangladesh regulates fishing activities within its exclusive economic zone in accordance with the 1983 Marine Fisheries Ordinance and the 2020 Marine Fisheries Rules (Ministry of Fisheries and Livestock, 1983; Ministry of Fisheries and Livestock, 2020). This legal framework covers license issuance, fishing moratorium regulations, vessel registration, and resource assessment. It has played a role in preventing foreign vessels from entering the Bay of Bengal illegally. However, the enforcement of fisheries laws is weak, and overfishing and illegal fishing activities in nearshore areas are widespread. These activities pose a serious threat to local marine biodiversity.

In response to its international obligations, Bangladesh has signed the United Nations Convention on the Law of the Sea (UNCLOS), the International Convention for the Prevention of Pollution from Ships (MARPOL), and the Convention on Biological Diversity (CBD) (United Nations, 2022; CBD Secretariat, 2021). After winning maritime boundary delimitation cases against India and Myanmar in 2014 and 2015, Bangladesh advanced its "Blue Economy Policy," which promotes the sustainable development of marine energy, aquaculture, and fisheries while ensuring environmental protection.

In 2021, the Government of Bangladesh, under the leadership of the Prime Minister's Office, proposed the Blue Economy Development Framework. The framework emphasizes cross-sectoral coordination mechanisms, the sustainable use of marine resources, the establishment of marine data systems, and the strengthening of marine environmental protection (Ministry of Foreign Affairs (MoFA) 2020). However, the framework has not yet been elevated to formal regulation with legal effect, and it remains primarily at the policy advocacy stage. Relevant enforcement mechanisms and regulatory standards are still immature.

Additionally, Bangladesh's coastal wetlands and mangrove forests, such as the Sundarbans (a World Heritage Site), play an important role in the global ecosystem. To protect these ecosystems, Bangladesh enacted the Forest Act of 1992 and the Wildlife (Conservation and Security) Act of 2012. These Acts establish protection levels for mangrove and coastal areas (Ministry of Environment, Forest and Climate Change, 1992; 2012). However, the region's ecosystems remain at high risk due to increasing pressures from rising sea levels, salinization, industrial encroachment, and illegal logging.

2.5 Maldives

The Maldives consists of over 1,190 coral islands scattered around the equator in the Indian Ocean. This makes it one of the lowest-lying countries in the world. Its exclusive economic zone, which is rich in marine resources including coral reefs, seagrass beds, sharks, tuna, and various marine mammals, covers about

900,000 square kilometers. The ocean is the core of the Maldives' national economy and the foundation of its ecological security and climate resilience. However, the Maldives' marine ecosystems are facing multiple challenges due to the intensifying impacts of tourism development, plastic pollution, coral bleaching, overfishing, and climate change.

To address these challenges, the Maldives has established a relatively comprehensive legal framework for marine environmental protection. The foundational environmental law is the Environment Protection and Preservation Act (Government of Maldives 1993), which authorizes the Ministry of Environment to oversee natural resource management and pollution prevention, and establishes an Environmental Impact Assessment (EIA) system (Government of Maldives, 1993). Under this law, all development projects that could affect marine ecosystems, especially those related to island construction and tourism, must undergo an environmental assessment and receive approval. Article 22 of the 2008 Maldives Constitution explicitly states that the state is responsible for protecting natural resources, including marine biodiversity, and ensuring a healthy ecological environment for future generations (The Constitution of the Republic of Maldives, 2008, Art. 22). This constitutional provision establishes the legal basis for environmental governance and grants citizens the right to participate in environmental protection efforts.

The Maldives has established multiple marine protected areas (MPAs) to safeguard coral reefs, shark habitats, and specific fish spawning grounds, demonstrating its commitment to marine ecosystem conservation. The Biodiversity Law (2012) and the Fisheries Act (2019) are the primary legal frameworks that govern the management of biological resources. Under these laws, the Maldives implemented a nationwide ban on shark fishing and introduced a vessel registration and quota system for tuna and other economically important species to manage fisheries sustainably (Ministry of Fisheries, Marine Resources and Agriculture, 2019). Additionally, the Maldives developed the National Ocean Policy Draft in 2017. This draft proposes establishing an interdepartmental coordination body, improving marine data collection systems, expanding marine protected areas, and developing an early warning mechanism for marine pollution incidents (Ministry of Environment and Energy, 2017). While this policy has not yet been fully enacted, its principles have been adopted in various national development strategies and international cooperation projects.

The Maldivian government prioritizes addressing the impact of climate change on the marine environment, particularly coral bleaching, rising sea levels, and coastal erosion. The Maldives is an international signatory to the United Nations Convention on the Law of the Sea (UNCLOS), the International Convention for the Prevention of Pollution from Ships (MARPOL), and the Convention on Biological Diversity (CBD). The country actively participates in implementing the "Protecting the Ocean" goal (SDG 14) under the United Nations Sustainable Development Goals (SDGs) (United Nations, 2022). The government has also proposed the concept of a "blue economy," which emphasizes the

advancement of ecotourism, marine research, and sustainable fisheries in an integrated manner.

However, the Maldives still faces many governance challenges. The scattered nature of the islands results in high regulatory costs and limited law enforcement capabilities. The environmental pressure caused by the country's heavy reliance on tourism is difficult to alleviate effectively. Meanwhile, plastic pollution and illegal fishing remain significant issues. To compensate for the lack of law enforcement capabilities, the government is working with international organizations such as the United Nations Development Programme (UNDP) and the World Wide Fund for Nature (WWF) to promote community participation, environmental education, and green infrastructure construction.

2.6 Comparative analysis of the legal systems for marine environmental protection in the South Asian countries

Although the legal systems for marine environmental protection in the South Asian subcontinent and neighboring island nations share deep historical commonalities, they also exhibit significant differences due to their distinct national conditions, economic structures, and geographical characteristics.

All five South Asian countries are signatories to the United Nations Convention on the Law of the Sea (UNCLOS), which is one example of a commonality. This convention establishes a general obligation for countries to "protect and preserve the marine environment," forming the basis for domestic legislation. All countries have adopted key conventions of the International Maritime Organization (IMO) to varying degrees, such as the International Convention for the Prevention of Pollution from Ships (MARPOL) and the London Dumping Convention. They have also incorporated these conventions into domestic law. All South Asian coastal countries have foundational environmental protection framework laws that provide overarching legal principles, institutional arrangements, and penalty frameworks for environmental issues, including marine pollution. Specific marine protection rules are scattered across multiple specialized regulations, such as the Maritime Administration Law, Fisheries Law, and Port Law, which are managed by different departments. All five South Asian countries have enacted legislation authorizing the government to establish marine protected areas, national parks, and nature reserves to protect critical marine ecosystems, such as mangroves and coral reefs, and to maintain biodiversity.

Five dimensions are used to compare the marine environmental protection legal systems of India, Pakistan, Bangladesh, Sri Lanka, and the Maldives: legislative completeness, enforcement effectiveness, policy priorities, and long-term challenges. (see Table 1)

It is evident that there exists a considerable disparity in the marine environmental legislation of the five countries of India, Pakistan, Bangladesh, Sri Lanka, and the Maldives. This discrepancy can be attributed to the varying national scales,

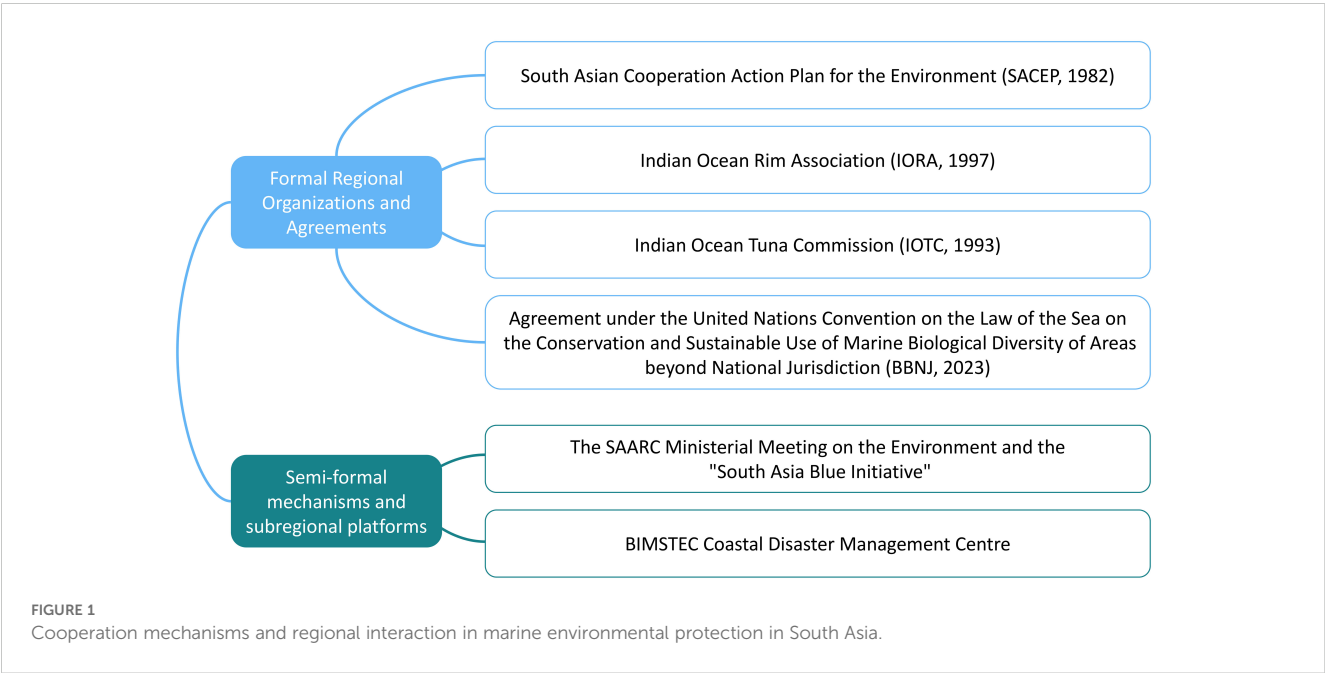
TABLE 1 Comparison of marine environmental protection laws in five South Asian countries.

Dimension	India	Pakistan	Bangladesh	Sri Lanka	Maldives
Legislative completeness	High(comple X system)	Medium(weak enforcement)	Medium	High (highly specialized)	Medium(highl y targeted)
Enforcement effectiveness	Medium-high (strong judiciary)	Low	Low	Medium	Medium-high(easy to manage)
Policy Core Points	oastal Zone Management, Judicial Oversight	Ship Pollution,Industria 1 Emissions	Climate Change, Mangro ves	Tourism Protection,Cor -al Reefs	Climate Change, Waste Management
Long-Term Challenges	Balancing Development and Conservation	Federal-interprovi ncial coordination and enforcement	Population Pressure, Poverty	Response to sudden pollution incidents	Geographical dispersion, cor al bleaching

economic structures, geographic vulnerabilities, and political priorities of these countries. India, in its capacity as a regional powerhouse, is distinguished by its possession of the most extensive and complex legal system. Pakistan and Bangladesh are both confronted with significant population and development pressures, with the implementation of effective enforcement strategies being a shared challenge. However, Bangladesh is noteworthy for its particularly notable commitment to mangrove conservation and climate adaptation. It is evident that Sri Lanka and the Maldives, as island nations and tourist destinations, have legislation that exhibits stronger ecological characteristics. The Maldives’ legislative framework is distinguished by its unique integration with national survival concerns, a distinctive attribute that sets it apart from the other four nations. While legal frameworks have been established in all five countries, the most significant challenge confronting all nations is the translation of these legal texts into effective on-site conservation and pollution control measures.

3 Cooperation mechanisms and regional interaction in marine environmental protection in South Asia

The five South Asian countries’ interaction in marine environmental protection is characterized as “multiple layers, cross-thematic, and a mix of soft and hard measures.” Formal mechanisms have been established based on the “regional cooperation” obligation under Article 197 of the United Nations Convention on the Law of the Sea. Additionally, loose networks have formed due to issues such as climate finance, the blue economy, maritime security, and fisheries resource management. Building on existing overviews, this section categorizes these mechanisms into two tiers and six categories. The aim is to present a realistic picture of interactions among the five South Asian countries regarding marine environmental protection in



recent years, as well as to conduct a legal assessment of the institutions' effectiveness. (See [Figure 1](#)).

3.1 Formal regional organizations and agreements

3.1.1 South Asian Cooperation Action Plan for the Environment (SACEP, 1982)

SACEP, established in 1982 by Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, is the designated implementing agency for this framework and related regional projects. It is officially recognized as an intergovernmental organization under Article 102 of the UN Charter and operates as the Secretariat of the SASP, one of UNEP's 18 Regional Seas Programmes ([UNEP, 2025](#); [CBD, 2021](#)).

To carry out its mandate, SACEP functions within an institutional structure composed of: a Ministerial Level Governing Council (GC) responsible for policy and programme direction; a Consultative Committee (CC) that facilitates implementation; National Focal Points (NFPs) and Subject Area Focal Points (SAFPs) in member countries for coordination and technical oversight, and a Secretariat (SEC) based in Colombo. This structure supports regional coordination, implementation oversight, and cross border collaboration ([UNEP, 2025](#)).

Since its establishment, the South Asia Co-operative Environment Programme (SACEP) has gradually evolved into a central regional platform for marine and coastal governance in South Asia, delivering a series of tangible achievements. In the field of marine plastic and waste management, SACEP has spearheaded the Plastic Free Rivers and Seas for South Asia (PLEASE) Project, adopted a Regional Marine Litter Action Plan (2019), and launched the Roadmap for Sustainable Waste Management and Resource Circulation in South Asia, thereby positioning itself at the forefront of regional responses to plastic pollution. Complementing these initiatives, the organization has also engaged in nutrient management, implementing the Controlling Nutrient Loading and Eutrophication of Coastal Waters Project (2014), which produced a Regional Action Plan and Policy Framework to mitigate eutrophication risks in the South Asian Seas.

In parallel, SACEP has advanced biodiversity conservation, most notably through the development of the Regional Marine and Coastal Biodiversity Strategy (2019), finalized in cooperation with UNEP, to strengthen national biodiversity action plans, foster collaboration, and address transboundary ecological challenges. Beyond pollution and biodiversity, SACEP has contributed to regional preparedness and environmental risk governance by formulating both National and Regional Oil Spill Contingency Plans, with support from IMO and NORAD, and by establishing cooperative frameworks for early warning, emergency response, and rehabilitation. Likewise, in partnership with IMO and the GEF–UNDP–IMO GloBallast Partnerships Programme, it has advanced efforts on Ballast Water Management, including the preparation of a regional strategy and the creation of a task force to confront invasive species risks associated with shipping. Finally, SACEP's

contributions extend to the broader sustainable development agenda, notably through the Post-2015 South Asia Development Agenda, which articulates regional priorities and aligns them with global sustainability frameworks.

SACEP and its successor, the South Asian Seas Programme (SASP), formally adopting the Action Plan for the Protection and Management of the Marine and Coastal Environment of the South Asian Seas Region in 1995, serve as South Asia's counterpart to the Basel Regional Marine Convention. The Action Plan introduced key components, including marine pollution emergency response mechanisms and regional data sharing frameworks ([CBD, 2021](#)).

However, since its inception, the program has witnessed only limited implementation. Two principal factors account for this outcome. First, persistent funding constraints have undermined operational continuity: member states' contributions cover only about 22% of the Secretariat's budget, leaving the program heavily reliant on short-term extrabudgetary assistance from UNEP and the World Bank ([World Bank, 2021](#)). Second, the framework is characterized by weak legal enforceability. It contains neither explicit liability clauses for cases of non-compliance nor binding dispute-resolution mechanisms, thereby reducing national commitments to largely political declarations without corresponding legal obligations ([United Nations Environment Programme \(UNEP\), 2021](#)).

3.1.2 Indian Ocean Rim Association (IORA, 1997)

Of the 23 member states in the IORA, four are South Asian coastal countries: India, Bangladesh, Sri Lanka, and the Maldives. Pakistan is a dialogue partner. The 2017 Jakarta Communiqué first included the "blue economy" as a core area of cooperation. The 2022–2027 Action Plan divides this area into five subprojects: the Indian Ocean Data Sharing Platform (IODSP); oil spill emergency drills; fisheries value chain development; marine renewable energy development; and green certification for coastal tourism ([IORA Secretariat, 2022](#)).

As of early 2025, only the IODSP has entered the testing phase for two reasons. First, there are budget allocation challenges because the IORA budget is primarily funded by the United Arab Emirates, Australia, and India, while smaller South Asian countries have limited financial capacity. Second, there are data sensitivity issues because real-time AIS and climate remote sensing data are considered national security assets. India and Pakistan have long been unable to compromise on the format of the data and the depth of its sharing. Third, the legal foundation is insufficient. IORA is not a treaty-based organization, so it lacks binding power, and member states' implementation of action plans remains a "soft commitment".

3.1.3 Indian Ocean Tuna Commission (IOTC, 1993)

The Indian Ocean Tuna Commission (IOTC), established under Article 64 of UNCLOS, serves as the Regional Fisheries Management Organization (RFMO) responsible for tuna and tuna-like species in the Indian Ocean. Despite its broad mandate, the IOTC often struggles with compliance and enforcement, as its

measures rely largely on member states' implementation. South Asian countries play a prominent role in this context. For instance, Sri Lanka has been repeatedly encouraged to improve compliance with IOTC Conservation and Management Measures (CMMs), particularly in catch/effort reporting and observer programs, highlighting persistent capacity gaps (FAO, 2016). The Maldives, one of the largest skipjack producers, has emphasized the sustainability of its pole-and-line fishery, yet it faces challenges from fuel costs and resource pressures, while also being directly affected by the introduction of skipjack catch limits under IOTC frameworks (Adam, 2006; ICSF, 2023a). Moreover, in 2022, the IOTC published yellowfin tuna catch limits, allocating approximately 47,195 tons to the Maldives, 31,066 tons to Sri Lanka, and 14,468 tons to Pakistan, reflecting both the growing importance of these South Asian fleets and their constraints under science-based quota systems (SeafoodSource, 2022). Bangladesh, India, the Maldives, Pakistan, and Sri Lanka also collectively supported reforms on bigeye tuna sustainability, indicating an emerging—though still fragmented—regional alignment on conservation priorities (ICSF, 2023b). However, compared with RFMOs such as ICCAT or NAFO, the IOTC still lacks robust sanctioning mechanisms (e.g., port denial, vessel detention), which lowers the costs of non-compliance and perpetuates “free-riding” behavior in the region.

3.1.4 Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ, 2023)

The Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ), adopted in 2023, is widely regarded as a milestone in global ocean governance. Structured around four pillars—area-based management tools including marine protected areas (ABMT/MPA), environmental impact assessments (EIA), marine genetic resources and benefit-sharing (MGR/ABS), and capacity building and technology transfer (CBTT)—the BBNJ Agreement is expected to reshape national marine governance frameworks across South Asia (United Nations, 2023).

India highlighted concerns regarding the overregulation of traditional knowledge and digital sequence information (DSI), arguing that overly restrictive provisions could undermine open scientific collaboration and hinder innovation. At the same time, India welcomed the Agreement as a vehicle for strengthening technical cooperation, while stressing the importance of aligning BBNJ rules with the Convention on Biological Diversity (CBD) and the Nagoya Protocol to avoid institutional overlap (Press Information Bureau, 2024; CBD Secretariat, 2019). Pakistan, while supportive of equitable benefit-sharing, expressed reservations that the emerging mechanisms might constrain opportunities for future deep-sea mining. Its negotiating position emphasized the need to safeguard the developmental rights of resource-dependent developing states (Dawn, 2025; Ministry of Foreign Affairs of Pakistan, 2025).

Bangladesh approached the negotiations with a strong focus on CBTT, underscoring the Agreement's potential to enhance its national capacity for environmental assessments, marine monitoring, and marine protected area management. Dhaka stressed that the BBNJ framework should guarantee predictable access to funding, training, and technology transfer (The Business Standard, 2024; Dhaka Tribune, 2024). Sri Lanka adopted a similar position, framing the BBNJ as an opportunity to secure resources for ocean governance while simultaneously emphasizing the need to accommodate developing countries' constraints in research and implementation (Ministry of Foreign Affairs of Sri Lanka, 2025; Embassy of Sri Lanka in Stockholm, 2023). The Maldives, as a small island developing state (SIDS), focused on two priorities: ensuring that benefit-sharing arrangements for MGRs deliver tangible returns for smaller states, and leveraging CBTT to advance national climate adaptation, marine science, and conservation efforts (UN Office of Legal Affairs, 2024; Ministry of Climate Change, Environment and Energy, Maldives, 2024).

Overall, South Asian states perceive the BBNJ Agreement as a strategic channel to gain technical, financial, and institutional support. However, their divergent positions on MGRs, DSI, and benefit-sharing, coupled with the absence of a coordinated regional platform, have limited their collective bargaining power in subsequent rule-making processes (High Seas Alliance, n.d.). Greater regional coordination, either through SAARC or *ad hoc* coalitions, is increasingly seen as necessary for enhancing South Asia's voice in shaping BBNJ's implementation.

3.2 Semi-formal mechanisms and subregional platforms

3.2.1 The Plastic Free Rivers and Seas for South Asia (PLEASE) Project

The Plastic Free Rivers and Seas for South Asia (PLEASE) Project represents a pivotal regional initiative aimed at mitigating plastic pollution in the South Asian seas. Implemented by the South Asia Cooperative Environment Programme (SACEP), with support from the United Nations Office for Project Services (UNOPS) and funding from the World Bank, the project seeks to foster a transition towards a circular plastic economy across the region. Over the past five years, PLEASE has helped prevent more than 10 million kilograms of plastic waste from entering rivers and oceans across South Asia. The project has promoted the recycling of more than 626,000 kg of plastic waste in six participating countries: Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka (UNOPS, 2025).

The primary objective of the PLEASE Project is to catalyze actions that reduce the flow of plastic pollution into South Asian seas. This is pursued through a multi-faceted approach encompassing:

The first component involves competitive grant investments. A total of 12 Regional Block Grants and 16 Innovation Grants were awarded to initiatives with the potential to achieve significant and sustained reductions in plastic waste. These grants support pilot

projects that demonstrate scalable solutions for plastic waste management across the region.

The second component emphasizes public and private sector engagement. The project addresses plastic pollution by actively involving both sectors in South Asia. It supports the development of strategies, policies, and standards through a multi-year plastics policy program, collaboration with universities and research institutions, and the establishment of a database for life-cycle analysis and industrial data. Regular regional meetings between public and private sector stakeholders are facilitated to foster cooperation, knowledge exchange, and innovation.

The third component focuses on technical assistance and capacity building. SACEP delivers targeted technical support throughout South Asia to strengthen regional efforts in mitigating plastic pollution. Key initiatives include Bhutan's Clean Thimphu and Clean Paro Initiative, Nepal's comprehensive plastic inventory, Pakistan's National Plastic Waste Management Plan, and the design of a smart waste management system in the Maldives. Collectively, these efforts enhance data-driven policymaking, innovative solutions, and sustainable waste management practices in the region.

3.2.2 Disaster management under BIMSTEC

Disaster management has emerged as one of the priority areas of cooperation within BIMSTEC, reflecting the region's acute vulnerability to natural hazards such as cyclones, floods, tsunamis, and increasingly frequent climate-induced disasters. Since its inception, BIMSTEC has identified disaster risk reduction as a cross-cutting agenda, recognizing that effective disaster management is integral not only to human security but also to sustainable maritime development in the Bay of Bengal and wider Indian Ocean region. Institutionally, BIMSTEC established a Joint Working Group on Disaster Management and designated India as the lead country in this sector. India's National Disaster Management Authority (NDMA) has hosted a series of expert meetings, training programs, and simulation exercises, particularly focusing on coastal disaster resilience and humanitarian assistance and disaster relief (HADR) operations. The BIMSTEC Centre for Weather and Climate (BCWC) in India further supports this agenda by providing early warning, climate modeling, and technical inputs to member states, enhancing regional preparedness against ocean-related disasters (BIMSTEC Secretariat, 2025; BIMSTEC Centre for Weather and Climate MoA, 2014).

Recent years have witnessed several initiatives aimed at operationalizing cooperation. The BIMSTEC Disaster Management Exercise (BIMSTEC DMEx), first held in 2017 and subsequently institutionalized, has provided a platform for member states to practice joint responses to multi-hazard scenarios, including maritime search-and-rescue, oil spill management, and evacuation protocols (NDRF, 2017). The 2022 BIMSTEC Charter reaffirmed disaster management as one of the seven priority sectors, underlining its linkages with climate resilience and marine environmental protection (Kothari, 2022). More recently, from 2020 to 2025, BIMSTEC countries have advanced discussions on

a Regional Disaster Management Strategy and explored coordination mechanisms with the UNDRR and ASEAN for experience sharing.

However, challenges remain significant. The diversity in institutional capacities, technological gaps in early warning systems, and uneven resource allocation hinder the development of a truly integrated disaster response framework. Moreover, while BIMSTEC has made progress in simulation exercises, translating these into binding regional protocols or pooled resources for rapid deployment has been limited. The lack of sustained funding and the predominance of bilateral rather than multilateral assistance further constrain the organization's effectiveness.

For the Indian Ocean's "Blue Community", disaster management cooperation under BIMSTEC is both an environmental necessity and a trust-building measure. Effective collaboration in this domain not only reduces the socio-economic cost of natural hazards but also reinforces collective responsibility for marine ecosystem protection, as coastal resilience and disaster preparedness are directly tied to sustainable ocean governance. Strengthening BIMSTEC's role in disaster management—through joint early-warning networks, interoperable HADR protocols, and capacity-building for smaller member states—will thus be crucial for consolidating a regional framework that integrates human security with marine environmental sustainability. (See Table 2)

4 Major challenges to marine environmental protection cooperation among the five South Asian countries

The challenges that South Asian coastal countries face in fulfilling their international and domestic marine environmental responsibilities are evident not only in institutional design, but also in multiple structural factors, such as resource conditions, technical capabilities, and political security. (see Figure 2)

4.1 Fragmented regulations and insufficient coordination

In the marine environmental governance of these countries, fragmented regulatory frameworks and insufficient enforcement capacity have become fundamental obstacles to regional cooperation. While these countries have made initial progress in formulating marine environmental protection laws and policies, most still face issues such as the management of multiple legal frameworks, overlapping provisions, and the absence of enforcement agencies and interdepartmental coordination mechanisms. This leads to difficulties in implementing policies in practice.

4.1.1 India

Despite enacting multiple regulations, including the Environmental Protection Act (1986), the Coastal Regulation

TABLE 2 Recent developments in disaster management under BIMSTEC.

Year	Key achievement	Brief description
2020	2nd BIMSTEC Disaster Management Exercise (DMEx-2020)	Held February 11-13 in Bhubaneswar/Puri, Odisha, India; included tabletop exercise (TTX), field training exercise (FTX) on floods, and after-action review (AAR); one scenario focused on "disaster risks to cultural heritage sites."
2021	Strengthening Institutions and Agenda Setting	17th Ministerial Meeting (April 1, online) emphasized regional resilience; BIMSTEC newsletter reported Himalayan Science Council expert group meeting on links between ecological degradation and disaster risk.
2022	Adoption of the BIMSTEC Charter (establishing legal and institutional framework); Launch of Disaster Management Expert Group	5th Summit in Colombo adopted the Charter; May 12 first meeting of Disaster Management Expert Group to develop action plans for preparedness and coordinated response.
2023	Promoting Maritime Humanitarian Assistance and Disaster Relief (HADR) Standardization	Discussed draft "BIMSTEC Maritime HADR Component Guidelines," promoting cross-sector and cross-agency coordination.
2024	BIMSTEC Charter Enters into Force	Entered into force on May 20, providing legal foundation for disaster management cooperation; July second closed-door foreign ministers' dialogue in New Delhi to advance implementation of action plans.
2025	Launch of BIMSTEC Weather and Climate Centre (BCWC)	Announced during the 6th BIMSTEC Summit in April, aimed at enhancing regional disaster resilience through improved weather and climate services.

Zone Notification (CRZ Notification, revised in 2011), and the Plastic Waste Management Rules (2016). India’s unclear division of responsibilities between the central and state governments has resulted in ineffective local enforcement, particularly regarding the control of illegal coastal development and the protection of mangroves (Sakthivel, 2010). India lacks a unified management body for national marine affairs. Marine environmental matters fall under the jurisdiction of multiple ministries, including environment, fisheries, shipping, and energy. There is also a lack of horizontal coordination platforms between departments.

4.1.2 Pakistan

The situation in Pakistan is also quite serious. The country’s Marine Pollution Control Act (1997) lacks enforcement mechanisms for addressing oil spills and industrial pollution. Additionally, there is a lack of coordination between the federal and provincial governments. Environmental impact assessments for port expansions in Gwadar and other locations are not transparent, and pre-construction risk control measures are often not implemented (Sherazi, 2023).

4.1.3 Sri Lanka

Sri Lanka has complex regulations but lacks coordination. Marine conservation is overseen by more than ten laws and agencies, including the Marine Resources Management Act, the Coral Reef Protection Regulations, and port management

regulations. This fragmented legislative model has resulted in gaps in monitoring, conflicts in enforcement, and ambiguous responsibilities in governance (Kularatne, 2020).

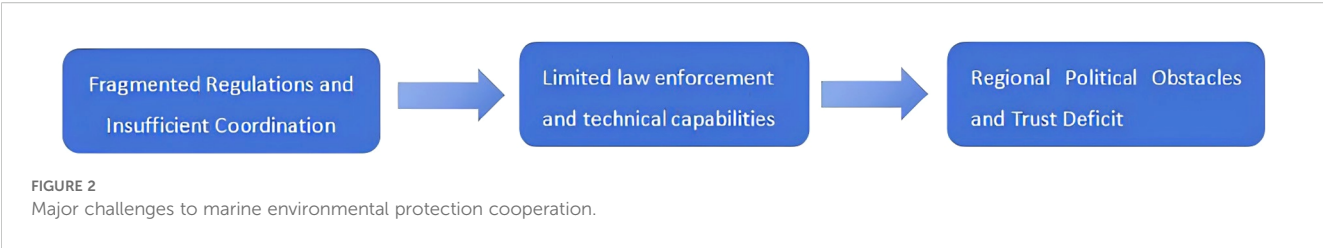
4.1.4 Bangladesh

In 2019, the Bangladesh government adopted the Blue Economy Development Strategy, which aims to promote the sustainable use of marine resources. However, the country has yet to establish systematic legal frameworks for controlling marine pollution, managing coastal zones, and monitoring marine ecology. Currently, enforcement relies primarily on outdated laws from the 1970s, such as the Marine Shipping Regulations. Furthermore, Bangladesh’s maritime police and environmental enforcement capabilities are inadequate, often failing to address illegal cross-border discharges and overfishing activities.

4.1.5 Maldives

The Maldives has the Environmental Protection and Conservation Act (2012) and the National Environmental Action Plan; however, its enforcement system relies heavily on donor projects and technical input from non-governmental organizations (NGOs). The Maldives lacks a systematic penalty mechanism for environmental violations, particularly those caused by tourism development in coastal areas (World Bank, 2024).

At the regional level, the South Asian Seas Action Plan, led by the South Asian Cooperation on Environment Program (SACEP),



lacks legal enforceability and regional coordination mechanisms. Member states have made insufficient financial commitments to the plan and have imposed policy constraints, leading to its implementation relying more on short-term project funding and external technical input. This makes it difficult to establish a stable institutional framework.

Thus, regulatory fragmentation undermines the efficiency of marine environmental protection and leads to legal inconsistencies and inconsistent enforcement standards when countries participate in regional cooperation mechanisms. This constrains the overall effectiveness of transboundary pollution control, the establishment of marine ecological protection zones, and emergency response mechanisms.

4.2 Limited law enforcement and technical capabilities

The five South Asian countries generally face dual constraints: insufficient law enforcement and weak technical capabilities in marine environmental protection. This structural bottleneck has become a key obstacle to cross-border cooperation at the implementation level. While countries have gradually improved the institutional foundation for marine environmental governance at the legislative and policy levels in recent years, they often face severe shortages of manpower, equipment, funds, and institutional enforcement capabilities at the operational level of monitoring, law enforcement, and emergency response.

4.2.1 India and Bangladesh

India is the country with the strongest technical capabilities in the region. It has robust research and development capabilities in areas such as remote sensing, disaster warning, and oil spill modeling. Examples include the Indian National Centre for Ocean Information Services (INCOIS). However, its law enforcement resources are heavily concentrated on the western coast, leaving a “technical black hole” in the direction of the Bay of Bengal. Of India’s 17 coastal states, none have an established, standardized coastal law enforcement emergency response mechanism. Most coast guard units lack the capability to handle complex marine incidents, such as chemical spills and biological contamination. Bangladesh’s maritime enforcement relies on the coordination of limited port authorities, the Ministry of Environment, and naval forces. However, it faces challenges such as outdated equipment, insufficient vessel numbers, and inadequate human resource training. According to statistics, Bangladesh has a limited number of patrol vessels capable of executing marine pollution emergency tasks, most of which are concentrated around Chittagong and Khulna. Bangladesh is often ill-equipped to address issues such as multi-point floating plastic pollution, illegal fishing, and coastal oil spills.

4.2.2 Sri Lanka and Maldives

Although Sri Lanka and the Maldives have taken an early lead in addressing coral bleaching and tourism ecological monitoring, they

remain highly reliant on external cooperation projects in areas such as remote sensing, buoy systems, and marine laboratories. For example, Sri Lanka’s primary coral monitoring system was deployed with funding from the United Nations Development Programme (UNDP), while the Maldives’ blue carbon monitoring relies on data processing and analysis platforms provided by Australian research institutions. This often results in data control being held outside the country and hinders the independent development of local research and emergency response systems.

4.2.3 Pakistan

Pakistan has established several environmental monitoring stations in important port cities, such as Gwadar and Karachi. However, most of these stations have been inactive for extended periods, and many have not disclosed their data. Pakistan currently lacks a comprehensive legal framework specifically targeting marine pollution. Existing legislation, such as the Pakistan Environmental Protection Act (PEPA) of 1986, incorporates certain environmental protection measures but does not provide a complete mechanism for marine pollution response. Although the National Disaster Management Act has established institutional structures, significant deficiencies remain in prevention mechanisms, interdepartmental coordination, and rapid response capabilities (Ali and Iqbal, 2021).

In summary, the structural shortage of enforcement resources and the asymmetry of technical capabilities weaken countries’ adaptive capacity to address marine ecological crises and pose substantial obstacles to transnational coordination, data sharing, and joint emergency response mechanisms. Enhancing the “co-governance capacity” of the five South Asian countries in the marine sector depends not only on institutional frameworks and funding, but also on prioritizing local technology transfer and capacity building as core breakthrough points.

4.3 Regional political obstacles and trust deficit

The political structural obstacles and trust deficit among the five South Asian countries in marine environmental protection cooperation are one of the core factors hindering the institutionalization of cooperation mechanisms, the institutionalization of projects, and the sustainability of platforms. Although the region is highly interconnected in terms of geography, ecology, and development needs, cooperation is often constrained by sovereignty sensitivities, strategic competition, and ideological differences in regional political practices, resulting in the inability to form sustainable and effective policy consensus on marine ecological issues in multilateral platforms.

4.3.1 India-Pakistan standoff and the failure of SAARC

The most representative political obstacle is the paralysis of the South Asian Association for Regional Cooperation (SAARC) mechanism caused by the long-standing conflict between India and Pakistan. Since the “Uri incident” in 2016, the SAARC summit

mechanism has been suspended, making it difficult to advance environmental issues such as the “South Asia Blue Initiative” (SABI). Marine environmental cooperation relies on cross-border coordination mechanisms such as data sharing, joint monitoring, and synchronized enforcement. However, SAARC’s “consensus decision-making principle” allows a single country to veto and block progress, severely delaying policy implementation (Venkat and Bhat, 2022). Even on ecological issues not involving sovereignty disputes, mutual security distrust between India and Pakistan continues to hinder technical exchanges between the two sides.

4.3.2 Lack of trust due to sovereignty concerns and obstacles to data sharing

Most South Asian countries strongly defend the sovereignty of marine data, especially information such as tidal monitoring, pollution source data, and the distribution of ecologically sensitive areas. Bangladesh and India, for example, have repeatedly accused each other of “concealing the true situation” due to discrepancies in satellite remote sensing data regarding mangrove forest degradation in the Ganges Delta. Additionally, although countries support regional platforms for data integration, they retain critical data on their own servers. This leads to low efficiency in joint modeling and disaster response.

4.3.3 Lack of institutional mechanisms for building trust

Currently, the South Asian region lacks a permanent platform and dialogue mechanism specifically designed to build environmental trust. Unlike ASEAN, South Asia lacks a dedicated “Multi-Stakeholder Dialogue Mechanism” for environmental issues and institutional arrangements for transnational NGOs and research institutions to serve as “trust-building bridges.” Progress on transnational scientific research cooperation has been slow due to issues such as visas and political reviews. The absence of knowledge co-creation and professional trust has weakened the foundation for cooperation, resulting in the marginalization of marine environmental issues in South Asian multilateral diplomacy.

5 Conclusion

According to UNCLOS Part XII, coastal states must “take all necessary measures to prevent, reduce, and control marine pollution” (Article 194) and engage in regional cooperation (UNCLOS, Article 197). Along with the International Convention for the Prevention of Pollution from Ships (MARPOL, 1973/78), the Convention on Biological Diversity (United Nations Environment Programme, 1992), the Basel Convention (1989), and the 2023 High Seas Biodiversity Treaty (BBNJ), coastal states’ international legal obligations have expanded from controlling single pollutants to protecting and sustainably using ecosystems overall. Currently, regional institutions in South Asia, such as the South Asia Cooperation Action Plan on the Environment (South Asia Cooperative Environment Programme (SACEP), 1982), the

Indian Ocean Rim Association (Indian Ocean Rim Association (IORA), 1997), and the Indian Ocean Tuna Commission (Indian Ocean Tuna Commission (IOTC), 1993), comprise a network of soft law and agreements for marine environmental protection in the region. However, these institutions are weak in terms of legal integration, capacity building, and dispute resolution.

In recent years, there has been an increase in incidents of plastic waste, oil spills, and coral bleaching in the Indian Ocean. These incidents highlight the region’s inadequate implementation of its obligations under the United Nations Convention on the Law of the Sea (UNCLOS) regarding regional cooperation, as well as the principle of “common but differentiated responsibilities” outlined in the 1992 Rio Declaration on Environment and Development. This study examines how domestic legislation, such as India’s Environmental Protection Act (1986), Sri Lanka’s Marine Pollution Prevention Act (2008), and the Maldives’ Waste Management Act (2022), aligns with international laws, such as UNCLOS, MARPOL, and BBNJ. The study assesses compliance gaps and cooperation progress among South Asian coastal states in fulfilling their international obligations. The study also examines the implementation status of the SACEP Regional Marine Pollution Emergency Response Plan and the IORA “Blue Economy Charter,” revealing the impact of political, economic, and institutional constraints on regional cooperation mechanisms.

The marine environmental protection practices in South Asian coastal countries suggest that building a “blue community” along the northern coast of the Indian Ocean will be a long and arduous process. In recent years, there has been a collaborative effort among India, Pakistan, Bangladesh, Sri Lanka, and the Maldives to protect the marine environment in the Indian Ocean, with some success. In the future, the five South Asian nations should direct their attention towards two key areas. On the one hand, the establishment of a regional knowledge-sharing and emergency response platform is imperative. It is recommended that India, Pakistan, Bangladesh, Sri Lanka, and the Maldives collaborate in the field of scientific research and data sharing, with the establishment of a regional marine data sharing center. Such a center would serve to consolidate national research data on water quality, fishery resources, and climate change impacts, thereby providing a scientific basis for decision-making. The five nations could collaborate in addressing environmental disasters, such as the development of regional joint emergency response plans for environmental incidents, including oil spills and chemical leaks, and the conducting of regular joint drills. On the other hand, the advancement of “blue economy” cooperation should be prioritized. It is recommended that the five South Asian nations explore integrating marine conservation with economic development, collaborating on sustainable fisheries, marine ecotourism, and marine renewable energy. This approach would enable countries to derive tangible economic benefits from conservation, thereby strengthening their motivation to participate in protection efforts. They must also continuously improve regulatory frameworks, align domestic and international rules, and advance toward a ‘blue community. This will allow them to steadily advance toward the construction of a “blue community.”

Author contributions

HZ: Formal Analysis, Methodology, Conceptualization, Writing – original draft. JW: Funding acquisition, Visualization, Conceptualization, Writing – review & editing, Supervision.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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