PROTECTING SRI LANKA'S COASTAL AND MARINE ECOSYSTEMS: CHALLENGES AND LEGAL STRATEGIES FOR SUSTAINABLE OCEAN GOVERNANCE

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1. Introduction

Sri Lanka's Coastal and marine ecosystems are central to the country's environmental integrity, food security and economic development. Fisheries support millions of livelihoods, coastal tourism generates foreign exchange and shipping routes place Sri Lanka at the heart of the Indian Ocean.[2] Despite this strategic importance, the country's marine environment is under severe and accelerating pressure from climate change, pollution and unsustainable exploitation of marine resources.[3] While these threats are often discussed independently, their combined impact reveals a deeper and more structural problem: the failure of Sri Lanka's ocean governance system to respond to interconnected environmental risks in a coordinated and effective manner.[4]

Contrary to common assumptions, Sri Lanka does not suffer from a lack of laws governing the marine environment; instead, it suffers from an overabundance of fragmentary legal regimes and institutions with overlapping mandates but weak coordination.[5] This fragmentation undermines effective enforcement, delays responses to environmental

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[2] R. R. Jayewardene, *the Law of the Sea and Sri Lanka* (Oxford University Press 1990).

[3] United Nations Environment Programme, *Integrated Coastal Zone Management in Sri Lanka* (UNEP 2019).

[4] S. Jayakody, 'Ocean Governance in Sri Lanka: Institutional Fragmentation and Legal Challenges' (2020) *32 Sri Lanka Journal of International Law 45*.

[5] E. J. M. S. Wijeratne, 'Environmental Governance and Institutional Overlaps in Sri Lanka' (2017) *29* Sri Lanka Journal of Development Administration *67*.

crises and allows serious harms to fall between institutional boundaries[6]. The 2021 X-Press Pearl maritime disaster starkly exposed these systemic weaknesses, demonstrating how fragmented authority can magnify environmental damage rather than contain it.[7]

This paper argues that Sri Lanka's marine crisis is fundamentally a governance failure rather than a purely environmental one.[8] It proposes the adoption of a legally binding Marine Spatial Planning (MSP) framework, supported by integrated technological monitoring, as a means of overcoming legal and institutional fragmentation.[9] Drawing comparative lessons from the United Kingdom and Indonesia, the paper critically examines both the promise and the practical constraints of such reforms within the Sri Lankan context.[10]

2. Fragmented Threats to the Marine Environment

Sri Lanka's marine ecosystems are subject to interconnected pressures arising from climate change, pollution, and overexploitation, which collectively expose the inadequacy of a fragmented legal governance framework. Climate change amplifies existing vulnerabilities, particularly for small-scale fisheries.[11] Yet current legal responses remain dispersed across sector-specific statutes with no coordinated mechanism for adaptation.[12]

Pollution presents a similar structural failure: while marine pollution incidents attract regulatory attention, the predominant threat from

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[6] World Bank, *Sri Lanka – Marine Fisheries and Coastal Resources Management* (World Bank Report 2020).

[7] Marine Environment Protection Authority, *X-Press Pearl Maritime Disaster: Incident Report* (MEPA 2021); *SC FR Applications Nos. 141/2021 et al.*

[8] Asian Development Bank, *Strengthening Marine Environmental Governance after the X-Press Pearl Incident* (ADB Brief 2022).

[9] UNESCO-IOC, *Marine Spatial Planning: A Step-by-Step Approach* (IOC Manual No 53, 2009).

[10] Marine and Coastal Access Act 2009 (UK); Ministry of Marine Affairs and Fisheries (Indonesia), *National Plan of Action to Combat IUU Fishing* (2016).

[11] Intergovernmental Panel on Climate Change (IPCC), *Sixth Assessment Report: Impacts, Adaptation and Vulnerability* (2022).

[12] United Nations Convention on the Law of the Sea (UNCLOS).

land-based sources is governed under separate legal regimes,[13] creating artificial divisions between terrestrial and marine regulation that fail to address cumulative environmental harm.[14] Overfishing further illustrates the limits of sectoral governance, as fisheries regulation operates largely in isolation from environmental protection and maritime enforcement, enabling illegal, unreported, and unregulated fishing to persist. Taken together, these threats demonstrate that Sri Lanka's marine crisis is not merely environmental in nature but is rooted in a legal framework that regulates interconnected risks through isolated and uncoordinated statutory mandates.[15]

3. The Existing Legal Framework

The current legal regime of ocean governance in Sri Lanka rests on a number of key domestic statutes, which address particular sectors in isolation from one another.[16] Accordingly, the Maritime Zones Law of 1976 defines the country's ocean boundaries, establishing the territorial sea, the contiguous zone, and the exclusive economic zone of Sri Lanka.[17] The Fisheries and Aquatic Resources Act, 1996, controls fishing by a system of licensing and seasonal closures, but narrowly frames the regime in terms of the extraction of resources.[18] The Coast Conservation Act of 1981 regulates coastal development within a narrow strip of the coast.[19] The Marine Pollution Prevention Act of 1981 addresses ship-source pollution, while the National Environmental Act of 1980 provides a general environmental umbrella, with provisions related to impact assessments.[20] Domestically, this regime intersects with binding international commitments, most importantly the United Nations Convention on the Law of the Sea (UNCLOS), which grants Sri

[13] National Environmental Act No 47 of 1980 (Sri Lanka).

[14] AO, *Marine Pollution from Land-Based Activities* (FAO Technical Report 2018).

[15] United Nations Environment Programme, *Marine Spatial Planning in the Indian Ocean Region* (UNEP 2020).

[16] S Jayakody, 'Ocean Governance in Sri Lanka: Legal and Institutional Challenges' (2020) *32 Sri Lanka Journal of International Law 45*.

[17] Maritime Zones Law No 22 of 1976 (Sri Lanka).

[18] Fisheries and Aquatic Resources Act No 2 of 1996 (Sri Lanka).

[19] Coast Conservation Act No 57 of 1981 (Sri Lanka).

[20] Marine Pollution Prevention Act No 35 of 1981; National Environmental Act No 47 of 1980 (Sri Lanka).

Lanka sovereign rights over its EEZ and places a duty to protect the marine environment, and regionally through the South Asian Seas Programmed, or SASP, which encourages cooperation on topics such as oil spill response and MPA establishment.[21] Although these laws and treaties provide some foundation for the management of Sri Lanka's oceans, they function more as a set of discrete and unconnected rules than an integrated system of governance.

4. The Real Problem

The core weakness in Sri Lanka's ocean governance is not an insufficiency of laws, but a deep structural fragmentation that divides responsibility across separate legal statutes and disjointed government institutions.[22] This fragmentation functions at two crippling levels: legal and institutional.

First, legal fragmentation signifies that each of the key laws-the Fisheries Act, the Coast Conservation Act, the Marine Pollution Prevention Act, and the National Environmental Act-was drafted in isolation, with no mechanism inbuilt to work with the others.[23] To illustrate this, while the Fisheries Act approves fishing harbors to support the industry, the function of the Coast Conservation Act is actually to prevent the very coastal erosion that such harbors can create.[24] Again, the Marine Pollution Prevention Act controls the pollution from ships, whereas the National Environmental Act and local ordinances control the land-based sources, which result in 80% of marine pollution.[25] This is a regulatory landscape of confusing overlaps and, more dangerously, critical gaps. Complex, interconnected threats—like climate adaptation, cumulative pollution, and habitat degradation—fall between these separate legal mandates and consequently remain unaddressed.

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[21] UNEP, *South* World Bank, *Sri Lanka: Marine Fisheries and Coastal Resources Management* (World Bank 2020); *Seas Programme: Strategic Action Plan* (UNEP 2019).

[22] Asian Development Bank, *Strengthening Environmental Governance in Sri Lanka* (ADB 2022).

[23] E Wijeratne, 'Fragmentation in Environmental Regulation in Sri Lanka' (2017) 29 *Sri Lanka Journal of Development Administration* 67.

[24] Coast Conservation Department, *Coastal Zone Management Plan* (CCD 2018).

[25] UNEP, *Integrated Ocean Governance in the Indian Ocean Region* (UNEP 2020).

This legal confusion is mirrored and magnified by institutional fragmentation. Each of these sectoral laws is administered by a different government department, each with its own budget, priorities, and bureaucratic culture. The result is chronic poor coordination and weak enforcement.[26]

Governing Law	**Primary Agency**	**Key Coordination Conflict**
Fisheries Act	Dept. of Fisheries & Aquatic Resources (DFAR)	vs. Coast Conservation Dept.: Fishing infrastructure vs. habitat protection.
Coast Conservation Act	Coast Conservation Dept. (CCD)	vs. MEPA/CEA: Coastal development permits vs. pollution control.
Marine Pollution Prevention Act	Marine Environment Protection Authority (MEPA)	vs. Navy & CEA: Needs Navy for sea enforcement; land-based sources handled by CEA.
National Environmental Act	Central Environmental Authority (CEA)	vs. All Agencies: Overlaps on virtually all pollution and development issues.
General Enforcement	Sri Lanka Navy	vs. DFAR & MEPA: Enforces rules it does not set, with no formal coordination.

The result is a bureaucratic maze, where action is paralyzed by disputes over jurisdiction. A report of illegal fishing triggers a chain of referrals from the Fisheries Department to the Navy and back, as the offender escapes. Pollution from a coastal factory becomes a debating issue between the Coast Conservation Department, MEPA, and the CEA, over who is responsible.[27]

[26] Marine Environment Protection Authority, *Annual Report* (MEPA 2021).

[27] *X-Press Pearl* Fundamental Rights Applications, Supreme Court of Sri Lanka (SC FR Nos 195–198/2021).

5. The Proposed Solution

This paper proposes the adoption of a National Marine Spatial Planning (MSP) framework as the core integrative mechanism of Sri Lanka's ocean governance regime. Marine Spatial Planning is a legally structured, science-based process through which the spatial and temporal use of marine areas is allocated to achieve environmental protection, sustainable resource use, and regulatory coherence. A national MSP framework would establish a binding, map-based marine plan designating zones for conservation, sustainable fisheries, shipping and port access, tourism and recreation, and offshore infrastructure, thereby reducing user conflicts, enhancing legal certainty, and facilitating effective enforcement.

For MSP to function as an operative legal instrument rather than a policy aspiration, it must be supported by coordinated monitoring and enforcement mechanisms. This paper, therefore, advocates the integration of an AI-enabled maritime domain awareness system capable of consolidating data from vessel monitoring systems, automatic identification systems, satellite imagery, and radar to detect illegal, unreported, and unregulated fishing, monitor restricted zones, and support real-time inter-agency coordination among enforcement authorities.

Crucially, MSP must be embedded within Sri Lanka's statutory framework. This requires either the enactment of a dedicated Marine Spatial Planning Act or substantial amendments to existing fisheries and coastal legislation to mandate the preparation, implementation, and periodic review of a national marine spatial plan and to confer binding legal effect on all sectoral agencies. Institutional fragmentation should be addressed through the establishment of a statutory National Ocean Council with authority to coordinate ocean-related governance, resolve jurisdictional conflicts, and align sectoral mandates. In addition, climate adaptation obligations such as climate vulnerability assessments and adaptive management measures should be expressly incorporated into fisheries and coastal laws as integral components of the MSP framework.

6. Comparative Lessons

6.1. *The United Kingdom: Institutional Unification*

In turn, the UK's Marine and Coastal Access Act 2009 provides a powerful model of how to reduce institutional fragmentation.[28] The core innovation of the Act was to establish the Marine Management Organization (MMO), a non-departmental public body, as the single planning and licensing authority for most marine activities in English waters. Putting under one roof the MMO's functions relating to fisheries, licensing, conservation, and enforcement simplified decision-making and ensured a "one-stop shop" for stakeholders.[29] For Sri Lanka, this illustrates the efficiency in consolidating administrative functions within an empowered agency or council to rise above bureaucratic silos.[30]

6.2. *Indonesia: Technological Enforcement in the EEZ*

Indonesia is an archipelagic state with a very large EEZ area and has taken the lead in exploring technology applications as part of its efforts to combat IUU fishing. In support of its "sink the vessels" policy, Indonesia made significant investment in an integrated monitoring system, including a VMS and satellite technology using AI to monitor more than 5,000 licensed vessels and to detect dark (AIS-off) vessels.[31] Through the "eyes on the sea" initiative, Indonesia allows public reporting.[32] This indicates that for Sri Lanka, robust surveillance through the use of technology is not a luxury but an imperative that undergirds its sovereignty and sustainable management in the EEZ, thereby directly informing the current proposal for an AI-enhanced MDA system[33].

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[28] Marine and Coastal Access Act 2009 (UK).

[29] House of Commons Environment, Food and Rural Affairs Committee, *Marine Policy Statement and Marine Planning* (HC 2011).

[30] R Barnes, 'Marine Planning and the UK Marine Management Organization' (2013) *25* Journal of Environmental Law *419.*

[31] Indonesian Ministry of Marine Affairs and Fisheries, *Vessel Monitoring System (VMS) Policy Framework* (KKP Indonesia); FAO, *Global Record of Fishing Vessels* (2018).

[32] Global Fishing Watch, *Eyes on the Sea: Indonesia* (Global Fishing Watch Initiative).

[33] World Bank, *Combating Illegal Fishing in Indonesia: Policy and Technology Lessons* (World Bank 2019).

7. Conclusion

In conclusion, Sri Lanka's ocean crises, driven by pollution, overfishing, and climate change, are fundamentally a governance failure caused by fragmented laws and uncoordinated institutions. This paper argues that piecemeal legal reforms are insufficient; instead, the country requires a foundational shift toward integrated governance through a legally mandated Marine Spatial Planning (MSP) framework, empowered by Artificial Intelligence (AI) for monitoring and enforcement. Accordingly, we recommend: (1) enacting an MSP Act or amending key fisheries and coastal laws to establish a binding national ocean plan; (2) creating a statutory National Ocean Council to coordinate all relevant agencies; (3) investing in an AI-powered maritime surveillance system to combat illegal fishing and pollution; and (4) mainstreaming climate adaptation into all ocean management strategies. By adopting this holistic approach, Sri Lanka can transform its scattered regulations into a coherent, resilient system that safeguards its marine heritage, secures livelihoods, and offers a sustainable model for other coastal nations.