

Harmonizing the Marine Environmental Governance Framework to Combat Marine Oil Pollution within the Western Indian Ocean Region

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Abstract

The oceans, as critical components of the Earth's ecosystem, provide vital resources, including food security, economic and cultural interest to both coastal and non-coastal communities. However, the oceans and the marine environment face serious pollution and degradation problems, including oil pollution. There is a need for states within the Western Indian Ocean (WIO) region to work harmoniously with one another to combat marine oil pollution as a trans-boundary problem. The 1982 United Nations Convention on the Law of the Sea (the 1982 UNCLOS), as the "umbrella" convention for the protection of the marine environment, lays foundation for institutions like International Maritime Organization (IMO) and the United Nations Environment Programme (UNEP) to develop specific conventions providing general obligations for States in combating marine oil pollution. The nature of the oceans' resources requires harmonization of governance frameworks to effectively combat oil pollution, which threatens these shared resources. States have varying national laws which must be harmonized with the regional international laws to bring certainty and uniformity in enforcements and compliance. The Nairobi Convention (amended 2010), through its legal and institutional framework, provides platform for regional collaboration. It requires States to harmonize regional and national laws to simplify the governance framework for responding to marine oil pollution incidents. There is a need to interrogate effectiveness of the attempted harmonization of governance frameworks and how to address gaps within the WIO region. These gaps include lack of binding enforcement mechanisms, disparities in national implementation capacities, fragmented implementation, funding constraints and limited integration with the current global frameworks.

Keywords

Marine Oil Pollution, Nairobi Convention, Western Indian Ocean, Marine Environmental Governance, Harmonization, Oil Spill Preparedness and Response

1. Introduction

Marine governance frameworks generally encompass rules, regulations and institutional processes aimed at managing, protecting and preserving the marine environment and its natural resources. These governance frameworks are embodied in international conventions, regional agreements and States' national frameworks and policies.

While international conventions and regional agreements are important in the protection of the marine environment, their legal effect in a particular state depends on the constitutional and legislative system of that State. At the international level, a State that has validly consented to be bound by a treaty is subject to its treaty obligations in accordance with international law ([Vienna Convention on the Law of Treaties, 1969](#)). At the domestic level, however, the extent to which treaty provisions may be directly invoked or enforced may depend on whether the constitutional order follows a monist, dualist or otherwise differentiated approach, and on any legislation required to give the treaty domestic effect ([Aust, 2013](#)). Accordingly, this article distinguishes between international treaty alignment and domestic implementation, including the enactment of legislation, designation of competent authorities, adoption of contingency plans and practical enforcement.

Without the national machinery for enforcement of the international and regional agreements, they remain an illusion, an ideal that is unrealised or unenforceable. This is because, within the international plane, sovereign States are the actors. Without their individual commitment to enforce the agreed-upon international or regional standards for the protection of the marine environment, the standards have no consequence regionally or internationally.

There is a co-dependency of the various instruments adopted for the protection of the marine environment. Internationally, there are various institutional frameworks that equally depend on the regional frameworks and ultimately the national frameworks to achieve their objectives.

States achieve regional cooperation by allowing their respective relevant authorities to cooperate regionally through the regional frameworks. Different regions have adopted various regional agreements under the auspices of the UNEP Regional Seas Programmes (RSPs) to facilitate this cooperation.

The RSPs provide a framework for regional ocean governance that supports member States in managing their marine and coastal environments. Most regional seas, depending on the region and its needs, adopted a convention for the protec-

tion of the marine and coastal environment, or an Action Plan, or both. The Action Plans are often backed by robust legal frameworks in the form of regional conventions and associated Protocols addressing specific problems or specific objectives and goals as defined for their member states and parties to collectively achieve.

This paper focuses on the WIO region and the Nairobi Convention framework for the protection of its marine environment. It focuses on how the international conventions and standards have been harmonized, if at all, and the gaps within the framework of the Nairobi Convention.

2. Defining “Harmonization”

For purposes of this article, “harmonization” means the process of bringing international, regional and national legal, institutional and operational arrangements into sufficient alignment to permit coherent prevention, preparedness, response, monitoring, enforcement and compensation for marine oil pollution, without requiring identical national laws. The assessment, therefore, uses five indicators, namely, alignment of treaty obligations and national legal rules; designation and effectiveness of competent national institutions; adoption and alignment of national and regional oil-spill contingency plans; monitoring, surveillance, reporting and information-sharing capacity; and compliance, enforcement and access to liability and compensation mechanisms.

3. Methodology

This article adopts a doctrinal and comparative legal methodology. It examines the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the Nairobi Convention and its Emergency Protocol, the MARPOL (MARPOL, 1973), and OPRC regimes (OPRC, 1990), the 1992 Civil Liability and Fund Conventions and the 2001 Bunkers Convention, together with relevant Conference of Parties (COP) decisions, particularly COP Decision CP.10/6 on oil-spill preparedness and response.

The comparative assessment draws on national legislation, official government and maritime authority materials and official implementation materials for Kenya, Tanzania, South Africa, Comoros, Somalia, Madagascar and Mozambique. Where an official source establishes that a plan is being developed or updated, the article does not treat that as equivalent to a fully operational national system.

4. Marine Oil Pollution and Its Effects on the Environment

Major oil spills like the Torrey Canyon incident can have a crippling effect on the marine environment and coastlines (Anyanova, 2012). Oil enters the marine environment through multiple pathways, including tanker accidents, operational discharges, bunker spills, offshore exploration and production, and land-based sources (Transportation Research Board & National Research Council, 2003). The relative contribution of these sources varies by region, period and methodology.

Oil pollution generally comes from shipping activity and offshore oil production. Initially, sea-bed activities on oil exploration constituted a relatively small percentage of the oil pollution of marine environment due to technological challenges. This has since changed as new technologies have been developed to undertake this activity (Anyanova, 2012). It is estimated that billions of tonnes of crude oil and oil products are transported by oil tankers annually through the various maritime shipping routes. This makes vessels the main source of marine oil pollution. Throughout history, these major oil spills from tankers informed several conventions and regulations on marine environmental protection against oil pollution, like the International Convention for Oil Pollution (OILPOL) (OILPOL, 1954), concluded in 1954 and entered into force in 1958. It prohibited the intentional discharge of oil and oily mixtures from certain vessels in certain ocean areas.

Other than the Torrey Canyon, there were a series of other major oil spill incidents that followed it, which prompted the international community to react through conventions to address the environmental impacts of such oil spills. These incidents include the grounding of the Argo Merchant in 1976 resulting in the loss of nearly 240,000 tons of oil, the Atlantic Empress in 1978 resulting in the discharge of nearly 300,000 tons of crude oil into the ocean, the Exxon Valdez spilling 40,000 tons of oil in 1989, the sinking of the vessel Erika in 1999 off the coast of France, and the Prestige incident in 2002 off the coast of Spain (Fitzmaurice, 2016).

Recent oil spill includes the grounding of the Japanese vessel MV/Wakashio, which spilled oil within the waters of Mauritius, releasing over 1000 tonnes of oil into the ocean (IMO, 2026).

The growing demand for oil and the ever-growing size of the oil tankers used in the transportation of this oil have raised and continue to raise serious concerns over oil pollution and how the same should be dealt with.

The consequences of oil pollution are extremely damaging for marine landscape and ocean's inhabitants. This includes physiological or behavioral disruptions of species, death of both ocean wildlife and marine life at the sea shore through the prevention of their normal feeding, respiration and movement functions.

Oil spills also adversely affect the shorelines, open waters and the sea-bed, wetlands and corals, hence damaging fisheries and coastal amenities. The damage caused by such spills is highly unpredictable, as they do not depend on the size of the oil spill, but rather on other geographical factors like closeness to the shoreline and vulnerability of the area affected.

In the MV/Wakashio spill, despite the vigorous efforts to clean up the oil spill, the clean-up operations are still ongoing. It affected highly sensitive sites around the Mauritius island, including marine protected areas, nature reserves, and mangrove forests (Seveso et al., 2021). The effects are largely felt by local communities that rely on the ocean for their livelihood. It is feared that its effect and accumu-

lations in the mangrove forests will be felt in the long run (Seveso et al., 2021). This is because Mangrove forms a sensitive ecosystem and is an important nursery ground for various marine species such as fish and shellfish.

The effect of an oil spill is therefore not just ecological but also economic because it affects the livelihood of the coastal population. The tourism industry and the fishery industry are all affected due to contamination.

Given the centrality of the ocean in the ecosystem, managing marine oil pollution and protection of the marine biodiversity demand integration through the process of dissolving the boundaries between sea and land. It requires adoption of ecological approach, which depends on cooperation of States and their agencies working coherently to protect the marine environment, both domestically and internationally, within the regional maritime governance framework.

This ecocentrism approach, focusing on holistic concerns such as biodiversity and sustainable development, means that there is an increasing overlap in the jurisdiction and mandates of a number of States and agencies. This can lead to competition and conflict, and ultimately, to less effective implementation and indeed undercutting of otherwise compatible and complementary programmes. Harmonization of this governance framework is, therefore, key to achieving a sustainable solution to marine oil pollution.

5. The Nairobi Convention Framework

Following the eighth session of the Governing Council in 1980, UNEP supported the development of the Eastern Africa Action Plan and the Convention on the Protection, Management, and Development of the Marine and Coastal Environment of the Eastern Africa Region (Nairobi Convention) (Nairobi Convention, 1985). The Nairobi Convention was signed on June 21, 1985, and came into force on May 30, 1996.

The Convention provides a mechanism for States to cooperate, coordinate, and collaborate regionally on matters affecting their marine environment. It provides State Parties with mechanisms to effectively utilize their limited resources, both technological and expertise, from a wide range of stakeholders (UNEP, 2026). It has been amended to deal with emerging issues like climate change, coastal zone management, and the vulnerability of small island developing states (Nairobi Convention, 1985).

This paper discusses the legal framework of the Nairobi Convention and its interplay with international frameworks, like inter alia, the 1982 (UNCLOS) (UNCLOS, 1982), the International Convention on Oil Pollution Preparedness, Response, and Cooperation (OPRC) (OPRC, 1990), and the UNEP Regional Seas Programme in addressing oil pollution.

It highlights the current gaps in the governing frameworks that bring disharmony and how they can be harmonized to address the gaps identified within the WIO.

5.1. The Nairobi Convention's Legal and Institutional Framework

The Nairobi Convention presents the legal and institutional framework for cooperation within the WIO region. It is anchored in the provisions of Section 2 of Part XII of the 1982 UNCLOS, providing a general obligation for States to cooperate both globally and regionally in combating marine pollution.

The adoption of the Nairobi Convention was driven by several factors, such as the increasing industrial activities within the region, especially the increased interest in the oil exploration, as well as the increased transportation of oil products. Most key international straits used in navigation are found within this region, making it susceptible to oil spill incidents. The increasing risk of marine pollution from both shipping and maritime activities and the significant threat that oil spills pose to the region's marine biodiversity, coastal ecosystems, and the livelihoods of the coastal communities motivated its adoption.

It establishes the institutional framework within the region for the protection and management of the marine and coastal environment. There is a focus on oil pollution as a challenge to the region's marine environment. Within the Convention's framework, it makes reference to the development of national legislation and policies, which basically acknowledges the need for individual States to also have their own national legal, as well as institutional frameworks in dealing with marine oil pollution, which essentially incorporates or nationalises the regional policies and agreements.

The Convention's approach is multifaceted. While advocating for preventive measures, it also deals with response measures in case of an oil spill incident to mitigate the damage to the environment.

The legal framework also allows for the adoption of additional protocols to address specific emerging issues as and when they arise. It allows for amendments and the adoption of additional protocols to address these emerging issues as and when the need arises. There are Protocols to the Nairobi Convention and the Protocol Concerning Co-operation in Combating Marine Pollution in Cases of Emergency is an accompanying protocol providing more detailed provisions for regional cooperation in addressing oil pollution emergencies.

The flexibility also allows it to be tailored in the manner that it approaches protection of the marine environment to specific environmental concerns. These concerns could be arising due to the regional particularities, such as its ecosystem and marine biodiversity, as well as the economic interests of the region.

The Protocol establishes national systems for preventing and combating pollution incidents. This is covered under Article 3 of the Protocol. Each contracting State is under an obligation not only to establish, but to maintain a national system for responding swiftly and effectively to pollution incidents. To this end, States must establish and designate competent national authorities, develop national contingency plans, and maintain adequate equipment and trained personnel. In Kenya, for instance, there is established the Kenya Maritime Authority as the competent authority to deal with the maritime affairs in line with the Protocol.

Another key Legal framework is the Regional Contingency Plan (RCP). There is a draft regional contingency Plan that is yet to be adopted. There are efforts to conclude the draft contingency plan for adoption in the 2026 COP meeting. The RCP is key as it provides a tool for implementation of the Emergency Protocol. To effectively implement the RCP, contracting State parties need to adopt their respective National Oil Spill Contingency Plans (NOSCP) that align with the RCP.

Within its organizational structure, the Nairobi Convention has established institutional frameworks for its implementation and running of its affairs. These institutional frameworks encompass the Conferences of Parties (COP), a Secretariat (undertaken currently by the UNEP), and focal points in each contracting party, facilitating ongoing dialogue and cooperation.

National Focal Points are the main line of communication between contracting parties and the Secretariat. This is the link between the Secretariat and the States. The Secretariat serves as the central administrator for the Convention and implementation of the work program. The Convention also has, within its organizational structure, the Partners of the Convention who offer support in carrying out the activities of the work programme. It also has the Expert groups/Task forces that address emerging issues in the region, as well as the Regional Coordinating Unit (RCU), which acts as the central coordinating body of the Nairobi Convention.

The Secretariat also supports development of regional action plans, such as the Regional Oil Spill Contingency Plan (ROSCP), which provides a framework for coordinating responses to oil spills in the region. These plans are vital in assessing preparedness of States' parties to respond to environmental emergencies, like marine oil pollution, regardless of their individual capacities.

Regional Coordination Centres (RCCs) are provided for under the Regional Contingency Plan (RCP). They are yet to be established. The initiatives to establish the RCCs are currently driven by the donors and are fully dependent of the donor fund. This means that when the donor-funded projects end, the process also ends.

5.2. Its Harmonization with the Global Regime on Marine Oil Pollution

There is a deliberate effort to align the Nairobi Convention with the various global environmental conventions, such as the 1982 UNCLOS and the Convention on Biological Diversity (CBD), which indicates the region's commitment to protecting the marine environment against oil pollution and advocates for the sustainable use of the ocean resources.

There is also a deliberate attempt to align the provisions of the Nairobi Convention with international standards and best practices, including MARPOL, the OPRC Convention and the international liability and compensation regimes. These regimes should, however, be distinguished according to the source of pollution and the nature of the claim. The 1992 Civil Liability Convention (1992 CLC)

(CLC, 1992), principally governs pollution damage caused by persistent oil carried as cargo in bulk by sea-going vessels, ordinarily oil tankers. It establishes strict liability of ship owner subject to specified defenses and limits. The 1992 Fund Convention supplements the CLC by providing additional compensation where CLC compensation is inadequate or unavailable, subject to its terms (Fund Convention, 1992).

By contrast, the 2001 Bunkers Convention (Bunkers Convention, 2001), is a separate regime concerned with pollution damage caused by bunker oil used as fuel by ships, including non-tanker ships, and requires specified ships to maintain financial security. The two regimes, therefore, address different pollution sources and should not be treated as a single liability regime. Their relationship with the Nairobi Convention is relevant principally to ensuring that regional preparedness and response arrangements are capable of triggering, supporting and documenting claims under the applicable international compensation regime.

Article 4 of the Nairobi Convention establishes fundamental obligation for State parties in protection, prevention and combating of marine oil pollution. States are obligated to individually or jointly, as appropriate, take measures in conformity with international law to prevent, reduce and combat pollution of the region's marine environment (Nairobi Convention, 1985). To operationalize this provision, States are then required to come up with these measures aimed at preventing and combating oil pollution. These measures would be effective if they are uniform across the region, hence the need to have in place, for instance, a Regional Contingency Plan. States also need to update their National Oil Spill Contingency Plans (NOSCP) to align with the regional Plans for effective implementation and enforcement. This would align with Article 4 of the Protocol, which provides for development of contingency plans at both national and regional levels to respond to pollution incidents. These plans are crucial for ensuring coordinated and effective responses to oil spills.

This provision creates a general duty of care for the marine environment, which includes obligation to address oil pollution (Rochette et al., 2015). It reinforces the need for cooperation while recognizing the role of individual State nationally to combat marine oil pollution. This is because, internationally, States are acknowledged to be the key actors. International conventions and agreements, therefore, depend heavily on States individually to implement treaty provisions as well as their agreements to achieve any result.

Even in imposing general obligations on States to cooperate in combating marine oil pollution, the Convention appreciates the principle of common but differentiated responsibilities. This is seen in the choice of words in its drafting. For instance, reference to “best practicable means” and “in accordance with their capabilities” clearly appreciates that States usually have varying capabilities in both resources and capacity, which must be taken into account in the measures to be adopted under Article 4 (Sands et al., 2018).

Reference to preventive measures under Article 4 are measures to be adopted

to ensure marine oil pollution does not occur. These measures are achieved through regulations and policies adopted by State to minimize risks of oil pollution incidents. These could include having facilities within the ports for vessels to release oily waste, like oil mixtures from cleaning the hulls and the bunkers. State Parties may take advantage of this provision to incorporate provisions of other conventions into their regional legal framework on standards and regulations to govern marine environment, like MARPOL and SOLAS. It also subtly harmonizes the provisions of the Ballast Water Convention ([Ballast Water Management Convention, 2004](#)), by allowing the flexibility of states to take “all appropriate measures” to prevent oil pollution incidents.

The regulations and policies need to be aligned to international standards and best practices, provide stringent control measures on oil exploration, drilling, and transportation and discarding waters containing oily mixtures from ships. These preventive measures are in tandem with the precautionary principle, which is a key tenet of modern environmental protection laws advocating for taking necessary precautions to prevent oil pollution from taking place. Prevention, in most cases, is cheaper than the clean-up after an oil pollution incident. These costs can run into billions of dollars, like the case of Exxon Valdez ([Wadsworth & Stovi-Bradford, 2024](#)).

Article 5 of the Nairobi Convention addresses pollution from ships, which is a primary source of oil pollution in the marine environment. States parties are obligated to take all appropriate measures to prevent, reduce and control pollution within the Convention area caused by discharges from ships. States must ensure effective application in the Convention area of internationally recognized antipollution rules and standards ([Nairobi Convention, 1985](#)). This brings into play other international conventions adopted on marine environment protection, like International Convention for the Safety of Life at Sea (SOLAS) ([SOLAS, 1974](#)). This is because it is now accepted that seaworthiness is one of the main contributing factors when it comes to marine casualties or incidents. Ship-source pollution includes oil spills, either from the oil tankers or bunker oil, as well as any other oil spills from operational discharges and accidents ([Karim, 2016](#)).

By expressly requiring States under Article 5, to implement and enforce international rules and standards, it attempts to harmonize the international rules and standards with those of the region's and national rules and standards. For instance, rules and standards established under MARPOL, encompassing the standards for safety of ship as well as their seaworthiness. It presents the Convention's efforts at harmonizing international with regional rules and standards, hence bringing some uniformity in their enforcement ([Tan, 2006](#)).

The Convention, therefore, promotes a more coordinated regional approach in addressing ship-source pollution. This regional approach is harmonized with the larger global approach and in doing so, there is harmony in their implementation. A ship, by its nature, traverses several maritime jurisdictions and zones. While it may be flying a flag of one State, it essentially moves around and may never call the

ports of its flag state. This is also particularly for States that are flag states, although they are land-locked or geographically disadvantaged. Meaning, their ships will never call at their ports as they do not have ports in the first place. The harmonization of rules and standards ensures certainty for these ship owners and operators, making it easier for compliance with these standards by the ships wherever they go (de La Fayette, 2001).

Article 9 imposes an obligation on State parties to establish and maintain monitoring programs that can keep track of pollution levels in the marine environment. These programs are fundamental in providing requisite data on source, extent and effectiveness of response measures on marine oil pollution. By knowing the source, for instance, States are able to adopt measures to deal with oil pollution from the root. They inform need for adoption of new policies or revision of existing policies meant to combat oil pollution to address emerging issues. From these, States parties are able to identify emerging threats, which offer a more proactive way to deal with pollution incidents even before they occur. This ensures marine environment is adequately protected from oil pollution and States no longer react to damage or ongoing damage to the environment, but protect it from pollution damage in the first instance.

By sharing information that is accurate and in a timely manner, States are essentially abiding by the international set standards for undertaking surveillance and information sharing regionally to monitor their regional waters.

With the introduction or promotion of the sub-regional cooperation under Article 10, smaller groups of neighbouring States may collaborate on specific issues related to marine pollution affecting that smaller region. This provides an avenue for incorporation and harmonization of international conventions and regional agreements to national laws. Sub-regional cooperation may be effective in addressing a specific pollution issue swiftly where States likely to be immediately affected take immediate action to mitigate effect of pollution incident to the larger region. This allows States with shared immediate environmental concerns to pool their resources and expertise to remedy the situation swiftly.

Article 11 has adopted the so-called “all-hazards” approach by referring to emergencies, “whatever the cause” aimed at covering all manner of pollutions without discriminating the source or nature of the pollution or pollutant (UNEP, 2026). This is in tandem with the SDG Goal 14.1, dealing with reducing marine pollution of all kinds. It emphasizes both response and damage mitigation, which promotes a holistic approach to managing marine oil pollution in the region (Rochette et al., 2015).

The adoption of the Emergency Protocol, which is aligned with the OPRC 1990, is one of the major ways in which the Convention has harmonized its provisions with the global regime under the IMO conventions.

6. Gaps within the Governance Framework

The Convention has attempted to harmonize the regional governance framework,

but there are still gaps within the frameworks that must be addressed to achieve the objectives of the Convention, as well as the full harmonization of its governance framework.

The regional marine governance framework is currently fragmented institutionally as well as legally. This fragmentation is seen in both levels of governance, the national and the regional levels. These gaps are discussed below.

6.1. Weak, Unclear Enforcement Mechanisms

The absence of a dedicated regional enforcement body and mechanisms presents a challenge to the implementation of the Convention. Without an effective implementation, there cannot be an effective governance framework. Enforcement and implementation rely primarily on national levels of implementation and enforcement. It depends on States parties' willingness and abilities to implement and enforce their provisions.

The Nairobi Convention, while providing a framework for cooperation, does not establish a dedicated enforcement body with enforcement powers to ensure compliance with oil pollution prevention measures. Nationally, some States Parties do not have the capacity to have a robust institutional framework tasked with the protection of the marine environment. If national institutions are weak or inadequate, the region's framework is likely to be also weakened as they depend on one another to be effective.

The Convention's success relies on goodwill of State Parties. This is political and depends on governments of the day, which usually come in with priorities that may vary from those of previous government. There is, hence, lack of centralized mechanism for enforcement of the Convention and its protocols as well as the resolutions (Rochette et al., 2015). Enforcement is, therefore, left at the discretion of States Parties. This has led to inconsistencies on how its provisions have been applied regionally (Okemwa & Munga, 2020). Without a centralized enforcement mechanism, it is challenging to ensure all parties are meeting their obligations (Sands et al., 2018). Even where there is no compliance, there is no defined consequence to the non-compliant State to force compliance regionally.

6.2. Surveillance and Monitoring Gaps

There are limited monitoring and reporting despite the Convention encouraging information sharing and reporting on implementations. This limits data and inadequate monitoring by the States Parties. This stems from lack of resources or capacity by the States to undertake surveillance, regular and accurate environmental assessments and track their progress in meeting their obligations under the Convention (Nairobi Convention, 1985). It is, therefore, tedious to assess the overall performance and effectiveness of the Nairobi Convention in dealing with marine oil pollution in the region. The data is inadequate hence inaccurate to objectively assess the region's preparedness in dealing with oil pollution. This denies the region opportunity to identify areas where additional support or intervention may be

needed or necessary in good time, as they do not have accurate information to gauge the overall compliance and enforcement of the Convention.

Surveillance and monitoring require extensive resources, both monetary and in equipment. There is clearly no sustainable funding model, which means that State Parties lack sufficient funding for monitoring and enforcements. Without the adequate specialized equipment and expertise, they are unable to effectively undertake these activities (Francis & Torell, 2004). This is compounded by lack of trained personnel to specifically handle marine oil pollution.

6.3. Disparities in National Implementation Capacities

Within its institutional framework, the Nairobi Convention requires States to submit regular reports on their implementation efforts. Despite this requirement, there has been slow compliance due to inconsistency of the State Parties. The reporting system aims to track progress in implementing the Convention and its protocols, identify challenges and gaps in implementation and facilitate information sharing and transparency among contracting parties (Cinner et al., 2012).

Implementation has been uneven. This can be attributed to factors like different economic capacities, technical expertise, and lack of political commitment and goodwill. Some countries have established robust frameworks to address marine pollution, while others struggle with limited resources and competing national priorities.

This article applies five indicators, namely, the legal alignment, institutional responsibility, contingency planning, monitoring/reporting and enforcement/response capacity to each of the seven countries in its comparative assessment of the various State actors below.

Kenya has a comparatively developed institutional and operational framework. The Kenya Maritime Authority (KMA) manages National Marine Spills Response Contingency Plan, coordinates response drills, undertakes pollution inspections, keeps records of incidents, and conducts surveillance and monitoring. According to KMA, the plan is reviewed periodically and it works with the Kenya Ports Authority, the Oil Spill Mutual Aid Group and oil companies (Kenya Maritime Authority, 2026). Kenya therefore demonstrates relatively strong alignment across its legal and institutional responsibility, contingency planning and operational preparedness, although regional harmonization still depends on compatibility with the Nairobi Convention's regional arrangements.

Tanzania has a national environmental and maritime governance framework addressing marine pollution, while official environmental reporting identifies hydrocarbon oil spills from shipping and port activities as a significant marine pollution concern. Earlier regional oil-spill preparedness initiatives also involved Tanzanian authorities and the Nairobi Convention and the IMO framework. It has relevant legal and institutional foundations, with the degree of operational preparedness requiring continuing assessment against the same indicators (United Republic of Tanzania, 2026).

South Africa has a comparatively mature framework. The Marine Pollution (Control and Civil Liability) Act 1981 provides for prevention and combating of marine pollution by oil and determines liability for pollution from ships, tankers and offshore installations; the Merchant Shipping (Civil Liability Convention) Act 2013 gives domestic effect to the 1992 CLC Protocol. SAMSA has also supported national contingency planning and exercises, and South Africa has tested its National Oil Spill Contingency Plan through multi-stakeholder exercises (SAMSA, 2026). South Africa therefore scores strongly on legal alignment, institutional capacity and contingency planning, while the existence of a strong national framework does not remove the need for regional interoperability.

In June 2024, IMO reported that Comoros had a national oil-spill preparedness and response framework and had adopted an action plan to update its National Oil Spill Contingency Plan, with training of national responders and emphasis on communication, incident management and stakeholder coordination (IMO, 2024). Comoros therefore has identifiable institutional and planning arrangements, but the official evidence also demonstrates that strengthening and updating the system remains an active task (IMO, 2024). Its principal harmonization challenge is thus implementation capacity and operational strengthening rather than the complete absence of a framework.

Somalia has legal and institutional measures addressing marine pollution. The Fisheries Law prohibits intentional or accidental dumping of polluting substances or wastes into fishing waters and requires immediate reporting of accidental pollution (Federal Republic of Somalia, 2026). The Ministry of Ports and Marine Transport's Marine Environmental Protection Department is tasked with preventing and combating marine pollution and preparing an oil-spill contingency plan. Official regional capacity-building materials also record that Somalia's oil-spill contingency plan was under development and being improved (Federal Republic of Somalia, 2026). Somalia therefore has emerging legal and institutional arrangements. Its contingency and response architecture can be described as developing rather than fully operational.

Madagascar has a dedicated institutional mechanism (Ministry of Environment and Sustainable Development, Madagascar, 2026). The Ministry of Environment states that OLEP is responsible for preparing and coordinating responses to hydrocarbon pollution incidents, developing and updating national, regional and local oil-spill plans, organizing training and exercises, and coordinating response operations (Ministry of Environment and Sustainable Development, Madagascar, 2026). Official ministry information published in 2026 further indicates that OLEP operates ten strategically located branches equipped to respond to marine pollution. Madagascar therefore demonstrates a substantial institutional and preparedness framework, although the extent of regional interoperability and nationwide operational effectiveness requires continuing evaluation.

Mozambique has a formal marine-pollution regulatory framework, which includes the Decree No. 45/2006 approving the Regulation for the Prevention of Marine

Pollution (Government of Mozambique, 2006). Official offshore petroleum guidance also requires comprehensive oil-spill contingency planning at local and national levels and coordination among relevant parties (Law No. 8/2026 (The New Petroleum Law), 2026). These establish legal and planning requirements, but they do not by themselves demonstrate uniform implementation across the coastline. Mozambique would then be characterized as having a substantial regulatory and planning foundation, with the principal harmonization questions concerning operationalization, coordination, monitoring and response capacity.

On these indicators, the seven countries sought not to be placed into a simple binary category of “implemented” and “not implemented”. This study, instead, reveals different stages of institutional and operational maturity. Kenya and South Africa show comparatively developed national systems; Madagascar has a dedicated specialist response institution and planning mandate; Comoros and Somalia are actively strengthening or developing national systems; and Tanzania and Mozambique have relevant regulatory and planning frameworks whose practical effectiveness requires continuing assessment. The regional harmonization problem is therefore one of interoperability, common standards, capacity and consistent implementation as much as one of legal transposition.

6.4. Lack of a Sustainable Funding Model

The Nairobi Convention is grappling with financial challenges. Majority of States parties are often individually struggling and facing their own financial difficulties in implementing the Convention nationally due to limited financial and technical resources. This also translates to limited financial support being remitted to the Convention by Member States as their contribution. States Parties are, hence, inconsistent in their remission of funds. The inconsistency in funds remittances may also be attributed to a state government’s priorities, which might not include contributions to the Convention as a priority. Governments come and go, and in cases where there is change of government, the new government may not prioritize marine environment as an area of focus. The State would, therefore, rather channel its limited resources to deliver on the government’s manifesto as a priority, such as health, education and general eradication of poverty.

Inadequate or lack of robust and sustainable funding models also limits the harmonization of regional governance framework. Harmonization requires States to adopt national laws and policies that align with the regional framework. This calls for harmonization of even the institutional frameworks. Some States have functioning institutional frameworks with fully funded maritime authorities. Others may have established authorities that are not fully supported due to funding constraints. This hinders how they interact with their counterparts across the region.

Most of these Member States lack capacity and the technical expertise required for effective implementation of the Convention’s provisions. This expertise is acquired through extensive investments on both research and robust and consistent trainings and equipment, which is lacking in the majority of the State parties.

Lack of the technical expertise affects the ability of the States parties to have an effective monitoring and assessment mechanism to prevent, detect and address incidents of marine oil pollution. Inadequate or no proper monitoring and assessment mechanisms are directly linked to financial challenges facing the Convention. As a consequence, the Convention's ability to make evidence-based decisions to combat marine oil pollution cases is greatly hampered. This shows the interconnectedness of these gaps to the general success of the regional governing framework.

6.5. Inadequacy in Responding to Oil Pollution Threats

While the Convention provides a framework for addressing marine oil pollution, it does not fully address emergency response mechanisms in the event of an oil spill incident. This makes its current framework inadequate to deal with the oil pollution as they occur.

The process of developing and adopting new protocols to address emerging issues in oil pollution has been slow in catching up with the rapid evolution of environmental challenges. This is, despite the Convention generally allowing flexibility for adoption of any new protocol. For example, offshore drilling, deep-sea mining, and expansion of blue economy currently present new challenges as they have the potential of posing a significant risk to marine ecosystems caused by oil pollution from these activities. When the Convention was adopted in 1985, these activities were not as prevalent or considered a threat to the region as they are today. With the technological advancement, which has accelerated the exploration of the deep-sea mining, this threat has now become an eminent and a real threat. The Convention, therefore, did not earlier focus on this as a threat and the response mechanisms for oil spills resulting from these activities are not comprehensive.

Although it adopted a protocol to deal with climate change, it has not extensively and effectively provided for matters on climate change and what impact oil pollution, for instance, has on the environment. This goes to examining the effects of climate change to oil pollution, whether there are any changes in terms of the damage to the marine environment that are escalated by the current climate changes. It therefore lacks specific provisions to address the specific impacts of oil pollution on climate change and vice versa, with regard to the region's marine and coastal environments.

The grounding of the Japanese vessel MV Wakashio off the coast of Mauritius provided a practical test of regional preparedness. The subsequent Nairobi Convention process is assessed against COP Decision CP.10/6 ([Nairobi Convention, 1985](#)), which requested support for reviewing national oil-spill contingency plans, identifying capacity gaps and preparing oil-spill sensitivity maps. The Nairobi Convention's COP 11 report records that a review of National Oil Spill Contingency Plans was completed in 2023, with action plans developed for all countries except South Africa, and that regional incident-command training was undertaken ([Nairobi](#)

Convention, 1985). This demonstrates that regional preparedness work is progressing, but it also supports the conclusion that harmonization remains an implementation project rather than a completed legal state.

6.6. Incomplete Harmonization with Other International Environmental Laws

Although the Nairobi Convention seeks to operate consistently with broader international environmental law, it does not itself constitute a liability-and-compensation treaty. The principal issue is, therefore, not whether the Convention reproduces the CLC-FUND or Bunkers regimes, but whether regional preparedness, response, reporting and claims procedures are sufficiently coordinated with those regimes.

The 1992 CLC, as earlier indicated, applies principally to pollution damage caused by persistent oil carried in bulk as cargo by sea-going tankers and imposes strict liability on the ship owner. The 1992 Fund provides supplementary compensation where CLC compensation is inadequate or unavailable. The 2001 Bunkers Convention on the other hand is distinct in that it addresses pollution damage caused by bunker oil used as fuel by ships and provides a separate strict-liability and compulsory-insurance framework. The Nairobi Convention can strengthen harmonization by expressly mapping these regimes against regional response arrangements, identifying the applicable compensation pathway according to the pollution source, and ensuring that incident records, response costs and environmental damage assessments are generated in a form capable of supporting claims under the applicable regime.

The polluter-pays principle is better understood as operating across complementary legal instruments rather than being fully implemented by the Nairobi Convention alone (Fitzmaurice, 2016). A harmonized regional framework would connect prevention and response obligations under the Nairobi Convention and OPRC with the applicable liability and compensation mechanism, while also recognizing that the CLC-Fund regime and the Bunkers Convention cover different sources of ship-related oil pollution. Such coordination would reduce uncertainty over who bears response costs and how claims for pollution damage, preventive measures and reasonable environmental reinstatement costs are to be pursued.

This distinction should also be applied in considering other IMO environmental instruments. Rather than assuming that provisions of the Nairobi Convention automatically incorporate the Ballast Water Management Convention, the article treats the two as legally distinct instruments whose national implementation may nevertheless be coordinated. The more immediate harmonization gap for marine oil pollution is the operational interface between the Nairobi Convention, OPRC, MARPOL and the applicable liability and compensation regimes.

7. Why Harmonization

Harmonization of governance frameworks for the marine environment is very

critical, achieving consistency in implementation of the laws that would ordinarily create conflict both at national and regional levels of implementation. Effective harmonization will help address the gaps and weak enforcement mechanisms that are often created by differences in laws and policies adopted by States to address marine oil pollution. It ensures there are uniform rules and standards applicable regionally. This addresses the issue of disparities in national implementation capacities. A comprehensive harmonization encompasses enforcement mechanisms to ensure agreed-upon standards are adhered to by all actors within the region. States often demonstrate this by equally harmonizing their national laws with the regional framework and having provisions that mirror those of the regional agreements in place or seek to operationalize the general provisions of these regional agreements, providing for the obligations of the State Parties.

With the introduction of the port state control that is vital in the enforcement of the international standards and rules within the ports (IOMOU, 1999), harmonization of the regional governance with both global and national frameworks ensures uniformity in these rules and standards. This is important for those rules and standards imposed by the port states for entry into their port. It makes it easier for stakeholders like shipowners and operators to have certainty in terms of what is expected of their vessels within a particular region, which would be the same across all ports within the region, making compliance easier.

This boosts trade within the particular region and ensures that the rules governing the protection of its marine environment are equally adhered to.

Where standards and rules are harmonized regionally, States are able to focus jointly on how best to achieve or implement the provisions of the conventions. They are hence able to harmonize their capabilities by jointly undertaking activities and programmes geared towards protection of the region's marine environment. These would include joint surveillance and monitoring mechanisms as well as regular drills to test their general preparedness in case of an emergency. The grounding of MV Wakashio off Mauritius was attributed to lack of capacity to monitor the vast Exclusive Economic Zone, causing the accident and the resultant oil slick extending over 14 miles (Degnarain, 2020). This means if there were joint surveillance or monitoring, one State would have probably noticed the eminent danger and alerted Mauritius to act promptly.

8. Pathways to a More Harmonized Governance Framework

It is important to have in place a more standardised compliance and enforcement mechanism within the region that ensures that States within the region apply similar standards across their ports to help combat marine oil pollution.

8.1. Regional Compliance and Enforcement

Compliance is achieved through a robust enforcement mechanism that ensures standards are adhered to regionally. One of the challenges faced within the region is enforcements of the standards and regulations adopted to safeguard the regional

waters. It is time to start focusing a discussion on a regional body tasked with enforcement responsibilities. A regional enforcement body with the relevant mandates to oversee and monitor compliance and adherence to anti-pollution regulations is key to achieving the clean marine environment free from oil pollution. This enforcement body in its mandate, may be able to also identify priority institutional and legal frameworks for harmonization to assist in capacity building and transfer of technology to State parties. This may face challenges of having States to generally agree to have regional enforcement body that oversees compliance. This is because States generally are not receptive to even remotely relinquishing what may be perceived as their sovereignty to a body that they feel they may not have total control over. But this challenge can be overcome when a general consensus is reached on how this enforcement body will be established and its operational parameters. The consequences of not having it are far more detrimental than the perceived fear of lack of effective control and hence this can be explored to gain support of the State Parties.

8.2. Alignment of Contingency Plans

There have been discussions to align oil spill contingency plans with regional and international governance frameworks for ease of enforcement and to ensure they adopt individual contingency plans that are in tandem with the regional contingency and action plans. States within WIO region need to individually ensure they ratify key IMO conventions and the Nairobi Convention protocols. They ought to now expedite alignment of each States' contingency plans to the global regime on oil pollution. The Nairobi Convention already lays the foundation for them to easily do so. These alignments should cover their reporting procedures, training, research, and oil spill response mechanisms. This should take into account the best practices, particularly borrowing from more successful regions like the Baltic region within the Mediterranean marine environment.

8.3. Comparative Lessons from the Mediterranean Region

The Mediterranean region presents a best comparative case study as, among the key features is its adoption of the ecosystem approach that focuses on a healthy marine ecosystem and biodiversity achieved through combating pollution like oil pollution to achieve a sustainably clean marine environment and its aquatic life (UNEP/MAP, 2021). Through the European Union (EU) policy and governance framework, the region has achieved a considerable level of compliance. But like any other region, faced with the realities of dealing with sovereign States, the region also notes certain enforcement gaps which are mostly due to the non-uniform implementation of agreed rules and standards by individual States. This makes inter-agency coordination and cooperation challenging.

8.4. Regional Oil Spill Coordination Centre

The West Indian Ocean region has to focus on establishing its own Regional Oil

Spill Coordination Centre for pollution preparedness. This is an important body as it informs the general preparedness of the region as a whole to deal with marine oil pollution incidents. This body should maintain shared contingency plans, maintain equipment inventory, and coordinate cross-border response teams with authority to coordinate regional response to major pollution incidents, monitor compliance with regional and international standards, facilitate information sharing and provide technical assistance and capacity-building.

8.5. Capacity Building and Training

Expertise drawn from various sectors, like the private sector and the non-governmental organizations, builds the region's technical capacity to handle marine oil pollution. Harmonization of training standards is essential in this aspect of capacity building. State Parties within the West Indian Ocean region need to commit to increased and heightened training programs. This requires deliberately designating resources for this purpose as well as the region taking advantage of the training exercises organised by the IMO and UNEP to enable regions to undertake capacity building. Among the key mandates of the IMO is to provide technical support to member States and they do this in various ways, such as providing trainings of personnel and experts within the region.

8.6. National Institutional Alignment

There should be a regional emphasis on members to establish national institutional frameworks with clear mandate and require funding to undertake their responsibilities. The obligation lies with individual State Party to ensure it has a well-established and functioning institutional framework. When national frameworks align with regional frameworks, it is easier to identify the mandates of relevant authorities. The regional institutional framework, like the Secretariat and Focal Points, needs clear mandates and resources for prevention of oil pollution. These mandates must align with those prescribed in the national frameworks for coordination regionally. Certain States within the region have experienced some levels of political instability, which has affected their capacity to organize their national frameworks to align with the regional frameworks. They are a bit behind, although now appreciating the importance of prioritizing this regional alignment. They must first strengthen their national frameworks since these are key tools in implementation of the regional frameworks.

8.7. Sustainable and Diversified Financing

The key to the success of any governance framework is the ability to harness resources and fund its operations. This calls for a reliable, consistent and sustainable funding model to manage the regional operations. Instead of relying solely on the global compensation regime, for instance, the region should consider having in place its own oil pollution compensation funds to help fund its clean-up operations and other activities geared towards oil spill prevention. This may be achieved

through cooperation with the private sector and building consensus on the contribution modules to this fund.

It should take advantage of the resources within the private sector that can be harnessed through a robust partnership with the industry players, like oil marketers, exporters and transporters, with international donor support channelled through regional mechanisms.

Partnership with private sector has proven effective in mobilizing resources available within the private sector to support efforts of governments, both nationally and regionally. This also goes back to the question of why harmonization? With harmonization of the marine environment governance framework, it becomes clearer what areas have gaps and how these gaps can be filled to fully protect the marine environment against oil pollution.

One of the glaring gaps is the funding and resource capabilities. By identifying this as a gap, discussions can then commence on how to bridge this gap and most often, the private sector and NGOs come in to bridge the gap by providing fundings for projects geared towards achieving a clean marine environment. This support is for instance seen in the contributions of the Global Environment Facility (GEF), being the world's largest multilateral fund for the environment running into billions of dollars (GEF, 2026).

9. Conclusion

An integrated policy approach that is consultative and intentional in its efforts at harmonising the regional legal and institutional frameworks is key in protecting the marine environment against oil pollution. This is critical in boosting the region's sustainable blue economy and combating climate change and its effects.

It is, however, unrealistic to achieve total harmonization of the legal and institutional framework. The objective ought to be functional harmonization, which focuses on sufficient alignment of legal standards, institutional mandates, contingency plans, monitoring systems, enforcement practices and compensation pathways to enable States to act coherently while retaining their sovereign legislative and administrative systems. The comparative evidence demonstrates that the WIO States are at different stages of implementation, and that harmonization must, therefore, accommodate differentiated national capacity while establishing common minimum standards and interoperable procedures.

There is a need to enhance collaboration among member States on maritime surveillance, oil spill response, and enforcement of pollution regulations (Rochette et al., 2015). These are key areas where harmonization would be greatly appreciated. This is what regional cooperation under the Nairobi Convention seeks to achieve. States are able to individually and jointly invest in technical training, equipment, and infrastructure to improve national and regional capabilities to deal with the oil pollution and prevent the prevalence of its occurrence within the region. It is a more viable approach towards ensuring the port infrastructure and waste reception facilities are up-to-date and well-equipped to handle oily wastes from ships that dock

at their ports within the region.

Enforcement generally depends on the State Parties. The State Parties need to ensure strict enforcement and implementation of the mechanisms and penalties for pollution violations (Billé et al., 2016). By harmonizing standards and rules applicable within the region, the region will have uniform standards applicable to vessels calling their ports, which are already aligned with the internationally set standards. This also means that implementation by relevant national authorities is uniform as well as coordinated. These mechanisms work best if harmonized regionally to ensure regional ports apply same standards for vessels calling their respective ports or traversing their waters.

Industry players prefer certainty and by harmonization, they are certain of the standards that will be enforced against their vessels in a particular area, which then makes that region a preferred region for their vessels, hence boosting trade and the maritime traffic along the sea lanes.

It is therefore important for the WIO region to bridge the gaps highlighted herein to achieve a comprehensive harmonization of its marine governance framework. Bring uniformity in its enforcement mechanisms and boost trade in the region.

Author Contributions

Conceptualization, Faith Sulwe, Paul Musili Wambua and Akunga Nebat Momanyi; methodology, Faith Sulwe; formal analysis, Faith Sulwe; investigation, Faith Sulwe; resources, Faith Sulwe and Akunga Nebat Momanyi; writing—original draft preparation, Faith Sulwe; writing—review and editing, Paul Musili Wambua and Akunga Nebat Momanyi; supervision, Paul Musili Wambua and Akunga Nebat Momanyi. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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