



POLICY BRIEF

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IMO NET-ZERO FRAMEWORK: IMPLICATIONS FOR KENYA'S MARITIME SECTOR, FOOD SECURITY, AND A JUST ENERGY TRANSITION

Executive Summary

This policy brief summarizes key insights from a stakeholder consultative forum titled *"Implications of the IMO Net-Zero Framework for Kenya's Maritime Sector, Food Security, and a Just Energy Transition,"* held at the Kenya Marine and Fisheries Research Institute in Mombasa on 22 May 2025. Bringing together policy-makers, NGOs and maritime experts, the forum acknowledged Kenya's strategic maritime position, anchored by the ports of Mombasa and Lamu, and explored the potential implications of the regulatory requirements. Compliance with the regulations will necessitate substantial investment in port modernization, including infrastructure for zero-emission vessels and alternative fuels. While these shifts are likely to lead to a moderate increase in shipping costs, potentially affecting the competitiveness of African exports, these impacts are expected to remain limited, especially if well-designed mitigation measures are implemented. In response, the forum recommended a set of strategic interventions, including accelerating the development of green port infrastructure, scaling up investment in modernization, and enhancing the capacity of maritime workforce to ensure a just and equitable transition.

Introduction

The International maritime shipping is a key pillar of the global economy, accounting for 80 percent of global merchandise trade by volume and 70 percent by value. Despite its economic importance, the sector contributes about 3 percent of global greenhouse gas (GHG) emissions and remains a major environmental concern.¹

Without timely decarbonization, emissions are projected to increase in tandem with the growth in maritime trade.²

In this context, the eighty-third session of the Marine Environment Protection Committee (MEPC 83) of the International Maritime Organisation (IMO) marked a pivotal moment in global maritime environmental policy. The Committee approved amendments to Annex VI of the International Convention for the Prevention of Pollution from Ships (MARPOL), establishing the foundation for a Net-Zero Framework. The framework introduces mandatory GHG emission limits and carbon pricing mechanisms targeting ocean-going vessels over 5,000 gross tonnage, accounting for 85 percent international shipping CO₂ emissions.³

These amendments align with the 2023 IMO Strategy on the Reduction of GHG Emissions,⁴ and are expected to be formally adopted at a special MEPC session in October 2025, entering into force in 2027, pending ratification by at least two-thirds of the 108 Annex VI Parties, which currently cover 97 percent of the global shipping fleet.

The Net-Zero Framework adopts a dual policy approach aimed at accelerating the decarbonizing of international shipping. First, it established a global fuel standard designed to progressively reduce the GHG intensity of marine fuels on an annual basis. Second, it introduces GHG pricing mechanism under which vessels exceeding specified emission thresholds will be required to purchase compensatory units to offset their excess emissions.⁵

¹ Reducing emissions from the shipping sector. https://climate.ec.europa.eu/eu-action/transport-emissions/reducing-emissions-shipping-sector_en (Accessed on 2 August 2023)

² Fourth IMO GHG Study 2020. <https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Fourth%20IMO%20GHG%20Study%202020%20-%20Full%20report%20and%20annexes.pdf> (Accessed on 2 August 2023)

³ MEPC 83rd session – Key outcomes. <https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-83rd-session.aspx> (Accessed on 22 May 2025)

⁴ The 2023 IMO Strategy on the Reduction of GHG Emissions. <https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/annex/MEPC%2080/Annex%2015.pdf> (Accessed on 1 July 2025)

⁵ MEPC 83rd session – Key outcomes. <https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-83rd-session.aspx> (Accessed on 22 May 2025)

In contrast, vessels operating at or near-zero emissions will qualify for financial incentives, encouraging investment in clean maritime technologies.

A key feature of this framework is the creation of the IMO Net-Zero Fund, which will allocate revenues generated from the GHG pricing mechanism to support research and development, enhance port infrastructure, and facilitate a just transition, particularly in developing countries. Compliance will involve meeting either a base target and a direct compliance target, with provisions for trading surplus units or using remedial units acquired through contributions to the IMO Net-Zero Fund.⁶ The GHG pricing mechanism can potentially generate between US\$ 10 and 15 billion annually in the first years of its implementation.⁷

Through the introduction of a mandatory GHG pricing mechanism, the IMO is pioneering a key innovation in global climate governance. This marks the first sector-wide pricing mechanism at the international level, an unprecedented development not observed in any other sector. The approved amendments to Annex VI of the MARPOL underscores the IMO's capacity to make binding decisions on GHG emissions, even amid geopolitical complexity and resistance from a minority of member states. Notably, the IMO's strong enforcement mechanisms lend credibility to its climate initiatives, ensuring that adopted measures are effectively implemented. This stands in stark contrast to the often protracted and gridlocked negotiations under the United Nations Framework Convention on Climate Change (UNFCCC), and highlights the IMO comparative decisiveness and institutional authority. In this context, the IMO presents a promising model for effective multilateral climate cooperation and offers renewed optimism for advancing global climate action.

Implications for Kenya's Maritime Sector

The IMO Net-Zero Framework presents both opportunities and challenges for Kenya and the wider African region. While the introduction of GHG pricing mechanism is anticipated to moderately increase shipping costs, potentially affecting the competitiveness of African exports, these impacts are expected to be marginal.⁸ Moreover, they can be mitigated through equitable revenue allocation scheme under the Net-Zero Fund.⁹ The Framework also introduces a more stringent technical standards and reporting obligations, which pose significant challenges to many African countries, including Kenya, due to existing technical and institutional capacity constraints.

Nevertheless, the transition to low- and zero-emission shipping offers substantial opportunities. These include prospects for technological cooperation, modernization of port infrastructure, and the creation of green jobs across the maritime value chain.¹⁰ Realizing these benefits, however, will require substantial financial and sustained technical support.

Importantly, under the amended MARPOL Annex VI, eligibility to access resources from the Net-Zero Fund is restricted to states that have formally ratified the Annex. To date, only 18 African countries have completed the ratification process¹¹ and are consequently eligible to participate in the vote on the Net-Zero Framework during the special MEPC session scheduled for October 2025. In contrast, the majority of African States have yet to complete the ratification process, rendering them ineligible for both participation in the decision-making processes and access to critical financial support for maritime decarbonization efforts. For Africa to fully benefit from evolving maritime regulatory landscape, wider ratification and domestication of the MARPOL Convention are imperative. With a new round of global negotiations for the 2028 IMO Strategy on the Reduction of GHG Emissions and related long-term regulatory measures set to begin in 2027, it is crucial that African countries adopt a more proactive, coordinated and strategic regional approach. Without such alignment, Africa risks a fragmented engagement that could weaken its collective bargaining power in shaping future global maritime climate policy.

Kenya, with its strategically positioned ports of Mombasa and Lamu, is particularly exposed to these new regulations under Chapter 5 of MARPOL Annex VI. Compliance will require considerable investment in port modernization to accommodate low- to zero-emission vessels and associated fuel infrastructure, such as facilities for green hydrogen, ammonia, and methanol, and other alternative fuels.¹² While Kenyan shipping operators may face rising operational costs, the transition offers long-term potential for innovation and capacity building.¹³

Implications for Kenya's Food Security and a Just Energy Transition

Notably, the implications of the IMO Net-Zero Framework extend beyond the maritime sector. Given Kenya's dependence on maritime transport for agricultural exports and the importation of essential food commodities, the country may experience moderate increases in logistics costs and temporary pressures on port competitiveness.¹⁴ These developments, could in turn,

6 MEPC 83: Outcomes, reactions and implications. <https://www.worldports.org/mepc-83-outcomes-reactions-and-implications> (Accessed on 19 May 2025)

7 Smith, T., Frosch, A., Fricaudet, M., Majidova, P., Oluteye, D., Baresic, D. & Rehmatulla, N. (2025). An overview of the discussions from IMO's 83rd Marine Environment Protection Committee

8 MEPC Report of the Comprehensive impact assessment of the basket of candidate GHG reduction mid-term measures, July 2024

9 Ibid

10 Outcomes of the Marine Environment Protection Committee (MEPC 83). <https://www.seaandjob.com/imo-outcomes-of-the-marine-environment-protection-committee-mepc-83/> (Accessed on 22 May 2025)

11 Status of ratification of MARPOL 73/78, as per 5 June 2025. <https://www.imo.org/en/about/conventions/pages/statusofconventions.aspx> (Accessed on 25 July 2025)

12 MEPC 83rd session – Key outcomes. <https://www.imo.org/en/MediaCentre/MeetingSummaries/Pages/MEPC-83rd-session.aspx> (Accessed on 22 May 2025)

13 MEPC 83: Outcomes, reactions and implications. <https://www.worldports.org/mepc-83-outcomes-reactions-and-implications> (Accessed on 19 May 2025)

14 Isabelle, Rojon et al., (2021). The Impacts of Carbon Pricing on Maritime Transport Costs and Their Implications for Developing Economies

introduce some risks of supply chain disruptions and price volatility, potentially exacerbating food insecurity.¹⁵ However, the overall impact is projected to be manageable, particularly, if appropriate mitigation measures are adopted.¹⁶

Importantly, Kenya's and Africa's historical negligible contribution to global emissions underscores the necessity for a just and equitable transition. In this context, sustained support through capacity building, technology transfer and climate finance is essential to ensure that African states are not disproportionately burdened but are instead empowered to participate meaningfully in the global energy transition. In recognition of these concerns, MEPC 83 emphasized the importance of comprehensive impact assessments in vulnerable regions to prevent adverse socio-economic impacts and to protect low-income countries. In this respect, the potential impact of the Net-Zero Framework, particularly those affecting food security, will be continuously monitored in the lead-up to its implementation.¹⁷ Where risks are

identified, they will be addressed through targeted interventions financed by the IMO Net-Zero Fund, ensuring that developing countries can navigate the transition effectively.

Key Challenges

The implementation of the Net-Zero Framework presents a number of challenges. These include (i) limited green port infrastructure, with inadequate facilities for liquefied natural gas (LNG) bunkering, shore-side power supply, and integration of renewable energy; (ii) underinvestment in port modernization, hampering energy-efficient maritime operations; (iii) uncertainty surrounding zero- and near zero-fuels, particularly their availability, pricing, and compatibility with existing vessels; and (iv) significant skills gaps, including a shortage of trained expertise in GHG reduction, energy-efficient ship operations, and weak ship building capacity. Addressing these barriers is critical to enabling an inclusive and sustainable energy transition in the maritime sector.

Policy Recommendations

Below are the recommendations for the national government based on the outcome from the stakeholder forum on the implications of the IMO Net-Zero Framework for Kenya's maritime sector, food security, and a just energy transition:

1. Active Participation in IMO policy Making Processes

Historically, Kenya has maintained a relatively low profile within the IMO, often participating with a small delegation, and sponsoring few proposals to the MEPC meetings. This limited participation contrasts with the approach taken by many other IMO member states with significant maritime interests, which generally send larger national delegations and contribute more frequently to policy discussions and submissions. Active participation is crucial to ensure the country's perspectives are reflected in the development of maritime regulations and related implementation guidelines.

2. Promote Port Modernization

Kenya should prioritize investment in sustainable port infrastructure and operational systems as a key component of its maritime development agenda. Given the country's strategic geographical location,

Kenya's ports have the potential to transform into green bunkering hubs, providing facilities for the storage and supply of alternative fuels such as green hydrogen, ammonia, and methanol. Additionally, the adoption of on-shore power supply and other emission reduction technologies for ships at berth can play a key role in the global decarbonization of maritime sector and enhancing environmental performance of port operations.

3. Investment in E-Fuels and Alternative Energy Source

The transition to cleaner energy within the maritime sector requires a substantial focus on renewable energy sources including wind and solar. Among the emerging solutions, green hydrogen stands out as a transformative technology with a significant potential to advance sustainable development, particularly in Africa. Kenya endowed with abundant renewable energy resources, is well positioned to become a leading producer of green hydrogen. This is well aligned with the objectives outlined in the *Green hydrogen Strategy and Roadmap for Kenya*, presenting opportunity not only to support decarbonization of maritime operations but also to stimulate domestic economic growth through innovation, job creation and increased investment in clean energy infrastructure.

¹⁵ IMO approves net-zero regulations for global shipping. <https://www.imo.org/en/MediaCentre/PressBriefings/pages/IMO-approves-netzero-regulations.aspx> (Accessed on 19 May 2025)

¹⁶ MEPC Report of the Comprehensive impact assessment of the basket of candidate GHG reduction mid-term measures, July 2024

¹⁷ Ibid

4. Support for Research and Development (R&D) in the Maritime Technologies and E-Fuels

Enhancing maritime capabilities, fostering economic development, and strengthening global competitiveness require a deliberate and sustained investment in R&D, particularly in emerging technologies and sustainable energy solutions. Key areas of focus should include the modernization of port infrastructure, advancement on innovative vessel design and propulsion systems, and exploration of viable alternative fuels. Currently, the investment in maritime R&D remains insufficient and requires strategic prioritization to position the country at the forefront of sustainable and technologically maritime economy.

5. Fostering Regional Cooperation

Regional cooperation among African nations is essential for facilitating the exchange of knowledge, best practices and technical resources necessary for the decarbonization of the shipping sector. Platforms such as the African Union provide strategic forums

for articulating a common regional position on the development and implementation of IMO GHG emission reduction regulations and related guidelines. Strengthening such collaborative mechanisms will enhance Africa's collective capacity to engage effectively in global maritime governance. At present, Kenya's limited political, economic and diplomatic influence constrains its ability to independently shape outcomes within IMO's decision-making processes, underscoring the importance of regional cooperation.

6. Development of Skilled Green Maritime Workforce

Investing in education and specialized training programmes is essential for developing a skilled workforce capable of supporting the transition to green maritime sector. Targeted capacity building initiatives should be designed to equip professionals with the technical expertise, and operational competencies required to manage and implement emerging green technologies and sustainable infrastructure.