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New Climate Agreement for the Maritime Industry: Legal Challenges and Opportunities of the International Regulatory Framework for Developing Countries like Georgia

Abstract

The maritime transport, predominantly powered by fossil fuels, accounts for an estimated 2–3% of global anthropogenic carbon dioxide (CO_2) emissions. This figure projected to rise in the coming decades.

Against the backdrop of accelerating climate change, the maritime sector's contribution to global emissions has become a critical concern for both international legal frameworks and national policy agendas. This article explores the regulation of greenhouse gas (GHG) emissions from shipping, focusing on its implications for developing nations, with Georgia serving as a case study.

It examines core international legal instruments, including strategies set out by the International Maritime Organization (IMO) and regulatory approaches introduced by the European Union. Particular attention is given to the challenges Georgia faces in meeting its climate commitments and to the role of international technical cooperation initiatives, such as GloMEEP and GreenVoyage2050, in supporting national compliance efforts.

The article aims to identify existing legal and institutional gaps and to propose actionable recommendations to foster a more sustainable maritime transport policy in Georgia, thereby enhancing its engagement as a responsible international stakeholder.

Key words: *maritime transport, IMO, climate change, sustainability.*

Introduction

Global climate change is one of the 21st century's most critical challenges, significantly impacting the international maritime industry, especially maritime shipping. Maritime transport, heavily dependent on fossil fuels, accounts for 2-3% of global CO2 emissions, with this share expected to grow.[2]

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[2] The Fourth IMO GHG Study, Submitted to the IMO Marine Environment Protection Committee (MEPC) In July 2020, As Document IMO DOC. MEPC 75/7/15.

GHG emissions from maritime transport are regulated at global, regional, and national levels. While developed countries are advancing in low-carbon fuel adoption, the widespread use of sustainable maritime fuels remains uncertain due to concerns about efficiency, safety, and availability.

The International Maritime Organization (IMO) has been regulating GHG emissions since the late 1990s, but progress has been limited to technical measures. However, recent years have seen strides toward further CO2 reductions from ships and industry-wide. The IMO's role is expected to continue growing.

The Euroean Union (EU) has also intensified its focus on emissions, initiating concrete legislative actions in July 2021, aiming to hold all ships accountable for their emissions in EU waters.[3]

Understanding the regulatory framework is crucial, especially for developing and island states needing extra support to implement new maritime regulations. Georgia, as a case study, highlights legislative gaps that hinder progress and threaten sustainable development.

The aim of this article is to review the field of GHG emissions regulation in the maritime sector, covering existing rules and initiatives, as well as highlighting the difficulties that future regulations may pose for the maritime industry, including developing countries, using the example of Georgia.

Chapter 1. Relevant International Regulatory Framework

Climate change and reducing greenhouse gas (GHG) emissions from ships are among the IMO's primary regulatory challenges. Since the late 1990s, the IMO has actively worked to decrease ship-based GHG emissions, particularly CO2, closely tied to the fuel consumption of ships' engines.

While the IMO is recognized as the leading international regulator for maritime industry and climate issues, it's not the sole entity involved in regulating GHG emissions from ships. A key unresolved question remains: should this issue be managed exclusively as a maritime problem under the IMO, or should it also be addressed at the national level, similar to other climate change

[3] Regulation of GHGs from Ships, On the Valuable Discretion for Regulatory Solutions in a European and Finish Perspectives, Study Prepared by Dr. Linda Finska, Head of Research Henrik Ringbom, Åbo Akademi University, Funded by Finnish Maritime Foundation (Merenkulun Säätiö – Sjöfartsstiftelsen), Final Report, Submitted 10.2.2022.

challenges under the UNFCCC framework?[4] The resolution of this question is crucial as it influences the principles guiding GHG reduction measures and identifies the responsible regulatory authority at the national level — be it environmental agencies or maritime administrations.

The Paris Agreement, part of the global climate regime, encompasses all GHG emissions, including those from maritime transport. The agreement aims to limit global temperature rise to well below 2°C, with efforts to restrict it to 1.5°C. To align with these goals, GHG emissions must peak soon and reach a balance between sources and removals by the second half of the century. Allowing GHG emissions from ships to grow beyond 2050 would conflict with these objectives.[5] [6]

UNCLOS does not clarify this dilemma, merely referencing a "competent international organization," typically understood to be the IMO. However, it does not rule out the possibility of shared competencies among multiple organizations.[7]

The Paris Agreement's national-level GHG reduction commitments are not sufficiently tailored to maritime emissions. Unlike the IMO, the UNFCCC framework lacks flexibility and effective monitoring and enforcement mechanisms for international mobile sources like ships. Consequently, the international community broadly acknowledges the IMO as the most appropriate body to regulate this issue comprehensively.

To meet the Paris Agreement's climate goals—limiting temperature rise to well below 2°C, with efforts toward 1.5°C—maritime GHG emissions must be reduced by 50% by 2050 compared to 2012 levels and eventually reach zero by 2080. Significant fuel efficiency improvements alone cannot achieve this; total emissions are expected to increase by 50% to 250% by 2050 due to global trade growth.[8]

Achieving these targets requires transitioning to new fuels with low or zero GHG emissions. Although fuels like biogas are already in use, and options such as ammonia and hydrogen are

[4] Framework Convention on Climate Change (UNFCCC), United Nations Art. 3(1), 1992.
[5] ibid. Art. 2(1).
[6] ibid. Art. 4(1).
[7] *O'leary A. & Brown J.,* Legal Bases For Imo Climate Change Measures, Report By Environmental Defense Fund, Columbia Law School, 2018, available at <http://columbiaclimatelaw.com/files/2018/06/oleary-and-brown-2018-06-imo-climate-measures.pdf>.
[8] *Scott J., Smith T., Rehmatulla N., Milligan B.*, The Promise and Limits Of Private Standards In Reducing Greenhouse Gas Emissions From Shipping,29 Journal Of Environmental Law, 2017, 235.

being tested, it remains unclear which fuel will dominate. Each fuel's suitability varies by ship type, and global adoption challenges persist. According to DNV, a leading maritime classification society, ammonia and bio-methanol are currently among the most promising neutral fuels.[9]

1.1. Current State of Play

Following the Paris Agreement's adoption in 2015, the IMO, traditionally resistant to rapid change, took a significant step in 2018 by approving the "Initial IMO Strategy on Reduction of GHG Emissions from Ships."[10] This foundational document guided numerous regulatory debates over the next five years and set the stage for adopting the comprehensive strategy in 2023.[11]

Although the 2018 strategy was not legally binding, it established clear goals and resolved several critical issues. It also prompted IMO member states, major maritime leaders, and Council members to commit funds to finance new climate-related and sustainable maritime transport projects.

At the IMO's Marine Environment Protection Committee's 80th session in 2023, the revised and final strategy for GHG emissions from ships was adopted.[12] This strategy sets ambitious targets: a 20% emission reduction by 2030, 70% by 2040 (compared to 2008 levels), and zero emissions by 2050. These regulations are expected to take effect by mid-2027.

By 2030, the strategy also aims to promote the use of zero or near-zero GHG emission technologies, fuels, and energy sources, targeting 5% to 10% of international maritime transport.[13] The GHG strategy now includes the entire lifecycle of ship emissions, focusing on reducing emissions within the maritime energy system while avoiding negative impacts on other sectors.

To achieve these goals, the IMO has categorized the measures into two "baskets": a technical element, which involves a maritime fuel standard for gradually reducing GHG intensity, and an economic element, which introduces a price mechanism directly linked to GHG intensity.

"Adopting the 2023 IMO GHG Strategy marks the start of a new chapter in maritime decarbonization," said former IMO Secretary-General Kitack Lim during his closing remarks at

[9] <https://www.dnv.com/maritime/hub/decarbonize-shipping/fuels/future-fuels.html>.
[10] IMO DOC. Resolution N MEPC.328(76), Annex, (revised MARPOL Annex VI), Reg. 20.
[11] <https://www.imo.org/en/MediaCentre/PressBriefings/pages/Revised-GHG-reduction-strategy-for-global-shipping-adopted-.aspx>.
[12] IMO Resolution MEPC.377(80), Annex 15
[13] <https://www.dnv.com/news/imo-mepc-80-shipping-to-reach-net-zero-ghg-emissions-by-2050-245376/>.

the MEPC 80 session, emphasizing the importance of continued efforts in the coming years and decades.[14]

1.2. Are there any challenges for the implementation of these novelties?

As the global maritime regulator, the IMO has broad discretion. As a "competent international organization" under UNCLOS, the IMO is responsible for developing "generally accepted rules and standards".[15]

The IMO's founding convention grants it a broad mandate to undertake actions within the maritime sector. Although there may be legal challenges, such as potential conflicts with international trade law, these challenges can be resolved due to the global importance of the issue and the urgent need for regulation.

Thus, legislation does not pose a barrier to the development of further measures. It has been agreed that new rules, including market-based measures (MBMs), should be incorporated into MARPOL Annex VI. Considering the "tacit acceptance" approach of the MARPOL Convention, the amended rules apply to all existing parties unless they object to them. This procedure avoids additional ratification processes by states, facilitating the future application of new rules. Therefore, incorporating new rules into the existing MARPOL annex is essential for effectively achieving climate goals.[16]

1.3. EU Regulations and Legislative Framework

In September 2019, under Ursula von der Leyen's leadership, the EU intensified its focus on climate change with the "Green Deal," aiming for a modern, zero-emissions economy by 2050. The EU's 2030 emissions reduction target was raised to 55% below 1990 levels.[17]

[14] <https://www.imo.org/en/mediacentre/secretarygeneral/pages/marine-environment-protection-committee-(mepc-80),-3-7-july--2023---closing-remarks.aspx>.
[15] IMO, MEPC 76/7/11 (2021), PARA. 21.
[16] Regulation of Ghgs From Ships, On the Valuable Discretion for Regulatory Solutions in a European and Finish Perspectives, Study Prepared by Dr. Linda Finska, Head of Research Henrik Ringbom, Åbo Akademi University, Funded by Finnish Maritime Foundation (Merenkulun Säätiö – Sjöfartsstiftelsen), Final Report, Submitted 10.2.2022.
[17] <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en>.

On July 14, 2021, the Commission introduced the "Fit for 55" legislative package, targeting climate, energy, transport, and more, including the maritime sector, with an emphasis on domestic policy and cooperation with the IMO.[18]

The Commission deemed the 2018 IMO Strategy insufficient for shipping decarbonization. Thus, under the Green Deal, it introduced measures within "Fit for 55" to enhance the maritime sector's role in EU decarbonization. Key measures include integrating shipping into the EU Emissions Trading System (EU ETS), the "FuelEU Maritime" initiative for renewable fuels, and eliminating tax exemptions for ship fuels.[19]

These steps are designed to advance EU climate goals and ensure sustainability. Specifically, from January 2024, the EU ETS will apply to maritime transport, imposing a "cap and trade" system on ships of 5,000 gross tonnage or more, covering emissions on EU voyages and at EU ports.[20]

The FuelEU Maritime Regulation, adopted in July 2023, mandates annual GHG intensity limits for ships entering EU ports, aiming for an 80% reduction by 2050 and requiring zero-emission technologies at berth.[21] The Energy Taxation Directive removes tax exemptions for ship fuels, promoting cleaner technologies in line with EU goals.[22]

The Alternative Fuels Infrastructure Regulation sets mandatory targets for developing alternative fuel infrastructure across the EU, supporting sustainable and low-carbon transport, including maritime.[23]

1.4. Challenges Faced by Developing Countries

Three key issues stand out: financial and technological barriers, regulatory and institutional challenges, and the need for capacity building and training. Decarbonizing the maritime sector imposes a significant financial burden on developing countries. Global fleet decarbonization by 2050 could require annual investments of $8 billion to $28 billion, with infrastructure costs for

[18] <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en>.
[19] <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en>.
[20] <https://eur-lex.europa.eu/eli/dir/2023/959/oj>.
[21] <https://eur-lex.europa.eu/legal-content/en/txt/html/?uri=celex:52021pc0562>.
[22] <https://eur-lex.europa.eu/legal-content/en/txt/html/?uri=celex:52021pc0563>.
[23] <decarbonisation in shipping: overview of the regulatory framework - standard club>.

carbon-neutral fuels potentially reaching $28 billion to $90 billion annually.[24] These expenses are particularly challenging for Small Island Developing States (SIDS) and Least Developed Countries (LDCs) reliant on maritime transport.

Developing countries often lack access to advanced green technologies and expertise, with outdated fleets that are difficult to retrofit for new innovations. Compliance with international regulations requires robust regulatory frameworks and effective enforcement mechanisms, which are often lacking in developing countries. The complexity of international maritime regulations and the need for ongoing updates further complicate national implementation.

Capacity building and training are essential to equip maritime professionals in developing countries with the skills needed for decarbonization, covering new technologies, regulatory compliance, and environmental sustainability.
Given the challenges faced by developing countries, the IMO and the international community have taken specific measures to support these countries in their decarbonization efforts. Over the past decade, the IMO has initiated several programs to assist developing countries, including the Integrated Technical Cooperation Programme (ITCP)[25], the development of the Global Maritime Technology Cooperation Centres (MTCC)[26] network, and the "GreenVoyage2050" project, in which Georgia is a pilot country.[27]

These programs aim to enhance national capacities, promote green maritime technologies, and facilitate the transition to low-carbon shipping. The GreenVoyage2050 project, launched in 2020 with funding from Norway, provides technical assistance to participating countries, including Georgia, helping them implement necessary legal, policy, and institutional reforms, and training professional staff to adopt advanced legislative and innovative approaches for reducing GHG emissions from ships by 50% by 2050.

The IMO has identified over 200 pilot projects focused on zero-emission technologies, such as ammonia, hydrogen fuel cells, and methanol propulsion systems. The Global Maritime Forum's initiative to collaborate with industry leaders and governments is crucial for advancing these innovations.[28] Despite these significant initiatives, the implementation of new technologies and

[24] <https://www.imo.org/en/mediacentre/hottopics/pages/cutting-ghg-emissions.aspx>.
[25] <https://www.imo.org/en/ourwork/technicalcooperation/pages/itcp.aspx>.
[26] <https://www.imo.org/en/ourwork/partnershipsprojects/pages/imo-europeanunionproject.aspx>.
[27] <https://greenvoyage2050.imo.org/>.
[28] <The IMO Future Fuels & Technology Project (FFT Project)>.

infrastructure in developing countries remains slow and insufficient to meet the ambitious targets set by the IMO.

Key Legal Challenges and their Solutions

Developing countries often face legal and regulatory challenges in implementing these technologies. These include: 1. Regulatory compliance: Ensuring compliance with international standards requires harmonizing national legislation with global frameworks; 2. Enforcement of the legislative framework: Developing strong enforcement mechanisms is essential to ensure compliance with regulations. Capacity-building programs and technical assistance can strengthen institutional frameworks and improve monitoring capabilities.

Investment in R&D and promotion of technological innovation are essential for the maritime industry to transform to a low-carbon dimension. By leveraging international collaborations and financial mechanisms, developing countries such as Costa Rica and India have been able to overcome legal and regulatory challenges, make significant progress in decarbonizing their maritime sectors, and contribute to global climate goals.

Chapter 2. Georgia's Legal Framework and Existing Gaps

Georgia's maritime energy efficiency and pollution control legal framework includes national laws, governmental acts, ministerial orders, and circulars from the Maritime Transport Agency.[29] [30] [31] Key documents include the Maritime Code of Georgia, the Code of Administrative Offenses, and specific laws on the transport sector, education, certification, and training.[32] [33]

However, significant gaps remain. One of the main challenges from an international legal perspective is the need to ratify MARPOL Annex VI, which has yet to be fully integrated into Georgian legislation, despite several recommendations from the IMO and consultations with the organization's Secretariat.

[29] < https://www.mta.gov.ge/uploads/circulars/2018/6_circ_fsi_2018.pdf>.
[30] < https://www.mta.gov.ge//uploads/circulars/2023/circ.1.pdf>.
[31] < https://www.mta.gov.ge//uploads/circulars/2023/circ.2.pdf>.
[32] <https://www.mta.gov.ge/uploads/circulars/2018/6_circ_fsi_2018.pdf>.
[33] <https://www.mta.gov.ge//uploads/circulars/2023/circ.1.pdf>.

Although Georgia has committed to implementing the Paris Agreement and has submitted its Nationally Determined Contributions (NDCs) to the UNFCCC, this key strategic document is limited to general provisions and policies and does not sufficiently focus on emissions from the maritime sector and their regulation.[34]

For the first time, a brief mention of taking active steps toward climate change and maritime decarbonization appeared in the national maritime policy documents, specifically in the "Strategic Development Concept of Maritime Transport," adopted in 2023. This document indicates that:

“To reduce environmental pollution from GHG emissions from ships in Georgia, effective steps will be taken. GHG emissions from ports and shipping will be calculated, and a strategic action plan for reducing GHG emissions from ships in Georgia will be developed in line with the IMO’s Initial Strategy on GHG Emissions Reduction from Ships.”[35]

However, the strategic document references the outdated initial IMO GHG Strategy rather than the updated measures, which are more stringent and no longer relevant, highlighting a gap due to the long bureaucratic procedures involved in preparing and agreeing on the document.

Challenges also include insufficient infrastructure — Georgia's ports, all of which are privately owned or operate under long-term concessions, lack the necessary infrastructure to meet MARPOL Annex VI requirements, such as port reception facilities and shore-side electricity supply systems.

Additionally, there is a lack of incentives for promoting energy efficiency. Regulatory constraints, such as licensing requirements for supplying electricity to ships at ports, hinder the adoption of energy-efficient practices like “cold ironing”.

Implementing MARPOL Annex VI in Georgia involves several challenges, including government and private sector cooperation, infrastructure updates, and public-private partnerships. The non-binding nature of the current legal framework and the absence of specific technical regulations complicate compliance with modern international legal regimes.

[34] <https://faolex.fao.org/docs/pdf/geo209871geo.pdf>.
[35] <https://www.mta.gov.ge/ka/news/247>.

To address these challenges, Georgia, as a developing country, has received significant support from the IMO and partner organizations for nearly a decade. The first project in which Georgia participated as a pilot country was the global project "Global Maritime Energy Efficiency Partnership" (GloMEEP)[36] implemented from 2015 to 2018 with the support of the Global Environment Facility (GEF)[37], the United Nations Development Programme (UNDP)[38], and the IMO.

The project's achievements include the development of three key documents that should have facilitated the ratification of MARPOL Annex VI: 1) National Energy Efficiency Assessment; 2) Draft National Energy Efficiency Strategy; and 3) MARPOL Annex VI Implementation Legislation. Following the successful completion of this project and considering the challenges that developing countries still face, the IMO launched a new technical assistance project, GreenVoyage2050, in 2020 with funding from Norway. Georgia was selected as one of the five pilot countries.[39]

This project, which received an initial funding of $5.5 million, increased to $19.4 million in 2023, transitioning to its second phase. The project aims to assist participating countries in implementing necessary legal, policy, and institutional reforms and training professional staff to adopt advanced legislative and innovative approaches for reducing GHG emissions from ships by 50% by 2050.

One of the main focuses of the project is to support the implementation of the IMO GHG Strategy at the legislative level, facilitating the adoption of necessary changes and regulations in participating countries. The project also ensures capacity building and awareness-raising at both the national and international levels. However, considering the results achieved—or rather the lack of achievement—more work is needed to bring Georgia's maritime practices in line with international standards.[40]

2.1. Opportunities for Effective Implementation of the Climate Agreement in Georgia

[36] >https://glomeep.imo.org/>.
[37] <https://www.thegef.org/>.
[38] <https://www.imo.org/en/ourwork/partnershipsprojects/pages/gloomeep.aspx>.
[39] <https://sdgs.un.org/partnerships/global-maritime-energy-efficiency-partnerships-glomeep-project>.
[39] <https://greenvoyage2050.imo.org/partnering-countries/>.
[40] <https://www.imo.org/en/MediaCentre/PressBriefings/Pages/GreenVoyage2050-project-extended-to-2030-.aspx>.

To effectively implement MARPOL Annex VI and improve maritime energy efficiency in Georgia, specific steps are recommended:

Develop Specific Legislation and Regulations: draft detailed legislation and technical regulations to implement MARPOL Annex VI. The government should issue decrees assigning responsibilities to various agencies to avoid lengthy parliamentary procedures.

Improve Port Infrastructure: Upgrade port infrastructure to meet MARPOL Annex VI requirements, including reception facilities and shore power systems. Consider removing lengthy and costly licensing requirements for providing shore power to ships.

Strengthen Capacity Building and Training: Conduct training programs and capacity-building initiatives for relevant stakeholders, including port administrations and maritime agencies. Collaborate with international organizations to secure technical assistance and funding to support these efforts.

Enhance Inter-Governmental Cooperation: Strengthen cooperation between various government agencies, including the Ministry of Economy and Sustainable Development, the Ministry of Environmental Protection and Natural Resources, and the Maritime Transport Agency. Define each agency's specific role and responsibility in the implementation and enforcement of MARPOL Annex VI.

Promote Public-Private Partnerships: Encourage public-private partnerships to promote energy efficiency and innovation in the maritime sector. Involve private sector stakeholders, including shipowners, port operators, and maritime equipment suppliers, in developing and implementing energy-efficient practices.

Align with EU Regulations: Ensure that Georgia's legislation aligns with EU regulations on maritime fuel sulfur content and other environmental standards, as outlined in the EU-Georgia Association Agreement. Implement stricter regulations on maritime fuel and establish effective sampling and analysis systems for compliance monitoring.

Conclusion

Implementing a new climate agreement for the maritime industry is vital for mitigating climate change and achieving global goals. While the current international framework is fragmented, the

recent IMO agreement will harmonize regulations and simplify compliance. Technological innovation and international cooperation will be crucial in advancing green technologies and modernizing the maritime sector, especially in developing countries.

Georgia must remain actively engaged in this process at both international and national levels. Addressing legal gaps is essential; without it, international assistance will be necessary. Georgia should implement legislative initiatives and align its laws with EU regulations.

Georgia should create programs and incentives to increase maritime energy efficiency, which will promote compliance with international standards and sustainable economic growth. International projects like GloMEEP and GreenVoyage2050 have already set a strong foundation. By closing gaps and adopting recommended measures, Georgia can enhance energy efficiency, reduce ship emissions, and better align with global standards, positioning itself as a key player in the fight against climate change.

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