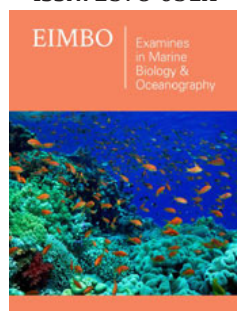


The Role of International Shipping in Mitigation of Global GHG Emissions: The Need for a Broader Perspective

ISSN: 2578-031X



***Corresponding author:** Maricruz Fun Sang Cepeda, Ocean Engineering, Federal University of Rio de Janeiro, Brazil

Submission:  September 27, 2022

Published:  October 11, 2022

Volume 5 - Issue 1

How to cite this article: Maricruz Fun Sang Cepeda*. The Role of International Shipping in Mitigation of Global GHG Emissions: The Need for a Broader Perspective. *Examines in Marine Biology & Oceanography*. 5(1). EIMBO. 000602. 2022. DOI: [10.31031/EIMBO.2022.05.000602](https://doi.org/10.31031/EIMBO.2022.05.000602)

Copyright@ Maricruz Fun Sang Cepeda, This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use and redistribution provided that the original author and source are credited.

Maricruz Fun Sang Cepeda*

Ocean Engineering, Federal University of Rio de Janeiro, Brazil

Opinion

The maritime transport industry is undergoing a green transformation, looking at everything from more efficient hull shapes, new propulsion systems, and alternative carbon-neutral fuels such as hydrogen or ammonia. The international maritime organization has set ambitious goals for decarbonization in the 2030 and 2050. Even if shipping is one of the most cost-efficient transport modes, this goal leads to one of the most challenging periods for this sector, [1]. Moreover, the maritime sector is part of a much broader global energy system. As such, effective climate mitigation strategies for shipping should consider its important interlinkages with other economic sectors - otherwise, the mitigation of maritime GHG emissions could imply rebound effects associated, for example, with land-use change, oil refining, or the power sector, potentially harming the achievement of overall climate goals. In addition, increasing costs of international shipping can also affect global trade and result in the production of goods and services with lower productivity, [2]. This can lead to rebound effects on global GHG emissions when the carbon intensity increases due to the suboptimal use of productivity factors. Many studies on the decarbonization of shipping have relied on sectoral models that focus only on vessel emissions. Similarly, the 2050 cutback target established by the IMO in 2018 touches only on shipping direct emissions. Considering the interdependence between shipping and the rest of the energy system, this strategy alone could be ineffective, potentially entailing spillover effects [3-5].

The Galápagos Islands, located in the Pacific Ocean surrounding the center of the Western Hemisphere, 906km west of continental Ecuador. The Galápagos are a series of volcanic islands, consist of 18 main islands, three smaller islands, and 107 rocks and islets. The Islands considered an extraordinary natural laboratory that was declared World Heritage by UNESCO, and it is one of the most famous destinations in the world for observing wildlife. The Islands are one of the world's premier ecotourism destinations, and that Galapagos tourism contributes hundreds of millions of dollars to Ecuador's national economy. Galápagos Islands planning a public policies of less carbon emissions on 2040. Some authors say that globally achieve zero carbon in 2050 is not possible, but the accumulate measures that Galapagos government implement could emit less pollution. The region and the action plan that this government do could incentive other countries of the region. Galápagos Islands are a big laboratory to experiment some theories about climate change and all the strategies could take inside the Islands corroborated that, [6-8].

To better understand the role of shipping in climate mitigation, a broader perspective is required. In this sense, Integrated Assessment Models (IAM) can be a useful tool. IAMs are modelling tools (generally containing a detailed representation of the energy, land use, and agricultural systems of a region) used to develop overall long-term mitigation strategies. As such, an IAM-based analysis can provide a systemic view of the problem indicating, for

example, whether specific alternative fuel strategies for a certain sector may lead to effective mitigation or to an increase in overall emissions. In the case of the shipping sector, which connects regions and industries, an analysis of this type could greatly contribute to the assessment of spillover risks and the design of appropriate fuel switch pathways [9].

References

1. IMO (2020) Fourth IMO GHG study. London.
2. EIA (2022) Short-Term Energy Outlook. U.S. Energy Information Administration.
3. Cepeda MFS, Moita JVMO, Monteiro GP, Caprace JD (2018) Estimating ship emissions based on AIS big data for the port of Rio de Janeiro. Proceedings of the 17th in International Conference on Computer and IT Applications in the Maritime Industries. pp. 189-203.
4. Evert AB, Lindstad E, Riialand AI, Strømman AH (2017) State-of-the-art technologies, measures, and potential for reducing GHG emissions from shipping-A review. Transportation Research Part D: Transport and Environment 52: 408-421.
5. Jianbo Lu, Huili Chen, Xinyi Cai (2022) From global to national scenarios: Exploring carbon emissions to 2050. Energy Strategy Reviews 41: 1-8.
6. Icaza-Alvarez D, Jurado F, Tostado-Véliz M, Arevalo P (2022) Decarbonization of the Galapagos Islands. Proposal to transform the energy system into 100% renewable by 2050. Renewable Energy 189: 199-220.
7. Lewis MF (2021) Achieving a Near-Zero CO₂ Transportation System Worldwide by 2050. International Encyclopedia of Transportation, pp. 353-358.
8. Lallana FJ, Di Sbroiavacca RN, Nadal GH, Sagardoy I, Barbarán G, et al. (2020) Energy supply and demand scenarios and energy policy options. Archipelago of the Galapagos Islands, Republic of Ecuador. Final report. Project: Mechanisms and Networks for the Transfer of Technologies Related to Climate Change in Latin America and the Caribbean (RG-72384), Fundacion Bariloche.
9. IMO (2020) IMO action to reduce GHG emissions from international shipping. Implementing the initial IMO strategy on reduction of GHG emissions from ships, London.

For possible submissions Click below:

[Submit Article](#)