



The Benefits of a Global Carbon Tax in Reducing Green House Gas Emissions

I. Introduction

International maritime shipping accounts for an astonishing 90% of world trade and 3% of world greenhouse gas (GHG) emissions.¹ An alarming International Maritime Organization (IMO) study estimates that GHG “emissions from international shipping . . . could grow by between 50% and 250% by 2050.”² Given the rapid rise of GHG emissions, the recently approved net-zero regulations for global shipping has never been more critical. The IMO was created, under the Kyoto Protocol, to reduce emissions and to release States from the responsibility of tracking GHG emissions.³ “The IMO, which has the power to impose a tax,” instead promulgated a sulfur reduction regulation, which should have reduced the use of fuels so toxic that they are prohibited from being used on land.⁴ However, the IMO included an exception for exhaust gas cleaning systems (scrubbers), which take clean ocean water, scrub the toxins from the exhaust of the burning fuels, and then release them into the ocean in the form of washwater.⁵ This exception has permitted the continued release of toxic materials into the ocean, as noted below.

Implementing a carbon tax will raise revenue for new technologies, which is part of the IMO’s strategic plan.⁶ Meanwhile, these technologies, such as automated ships, remain underutilized for improving outcomes for shipping companies, consumers, the environment, and maritime workers alike.⁷

II. The IMO’s Sulfur Reduction Regulation

The IMO’s sulfur reduction regulation incentivizes shipping companies to install scrubbers, which cost between two and eight million dollars per ship.⁸ The washwater dumped into the ocean is “up to 100,000 times more acidic than seawater,” is rich with heavy metals and sulfur, and as a result is very toxic to marine life.⁹ Some ports internationally have moved toward banning scrubbers,¹⁰ which allow ships to burn the cheapest and most toxic fuels, reducing the costs incurred by ship owners. However, the current patchwork of scrubber bans¹¹ results in inequities for shipping companies and consumers.¹² The cost of switching fuels in and out of these jurisdictions can be up to \$30,000 a trip per vessel.¹³ Because some areas have little to no regulations and others are subject to a patchwork, the result is significant variations in costs incurred to ship similar distances. The new regulation will be more equitable if it banned both toxic fuels and scrubbers consistently across the maritime shipping industry.¹⁴

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Instead of encouraging the waste of resources on technology that continues to pollute the ocean and may be rendered obsolete through technological advances, the IMO could seize the opportunity to encourage ships to install autonomous systems.¹⁵ The IMO will levy a tax through the Kyoto Protocol, and will restrict the most toxic fuels, but still allows for the use of scrubbers.¹⁶ The revenue gained by the tax will be used to reward low emission ships, support innovation, help mitigate harms to vulnerable states, and help install new technology.¹⁷ Indeed, this technology could result in savings to the industry. For example, if the income from the tax were used to implement the conversion of vessels to autonomous ships, the reduced speeds and increased use of ships without bridges would result in better fuel efficiency.¹⁸

III. Autonomous Ships Would Create Better Environmental and Economic Outcomes

Maritime Autonomous Surface Ships (MASS) is a new technology that could slash emissions, which in turn would improve outcomes for marine ecosystems.¹⁹ The IMO defines autonomous shipping as “refer[ing] to a ship that can perform a set of defined operations with no crew on the bridge.”²⁰ Few container ships currently utilize this technology.²¹ Despite initial hesitation, the IMO is working to reduce safety concerns arising from the use of unmanned vessels, through testing and the development of regulations.²² These ships are more cost effective, reduce emissions, and are more accurate navigators than human officers, as evidenced by “[s]tudies [which] show that between 75%-96% of marine accidents are a result of human error, often a result of exhaustion.”²³ A reduction in human error would mean fewer accidents and in consequence a reduced loss of life.²⁴ MASS also enhance supply chain efficiency because they are lighter, and by reducing congestion at ports, by reducing GHG emissions.²⁵ “For example, it was recently reported that idling ships at various U.S. west coast ports release over 100 tons of smog each day.”²⁶ The industry has faced a series of supply chain challenges in recent years, which has resulted in congestion at ports. These challenges have included worker shortages, COVID-19, and worker strikes, which led to a backlog of up to a hundred idling ships at some ports, which in turn caused substantial GHG emissions.²⁷ MASS can reduce their speeds as they travel, so that they schedule their arrival at ports at a time when berths are available, reducing the backlog at port.

Beyond emissions reduction, the development of MASS provides benefits shipping companies, consumers, wildlife, and the individuals employed on ships.²⁸ MASS can run at lower speeds than vessels operated by humans, which would reduce whale strikes by up to 80%.²⁹ Additionally, the lower speeds at which MASS can operate also reduce noise pollution, which could create a quieter environment for cetaceans, possibly reducing beaching events.³⁰ The technology could also curtail the transport




of invasive species by decreasing ballast dumping.³¹ A ship with no crew eliminates the need for a bridge.³² “The bridge does not only add unneeded weight to the ship, but also this weight is concentrated at the stern of the ship and requires heavy ballasts in order to keep the ship level.”³³ A ship without a bridge requires less ballast water to level it and in consequence less ballast water is transported and dumped.³⁴

The maritime industry faces an increasing crew shortage, with the International Chambers of Shipping (ICS) reporting that there is a current need for over 90,000 certified officers.³⁵ Implementing MASS would mitigate crew shortages and help improve maritime labor issues.³⁶ Autonomous ships could either contain minimal crew or be remotely operated.³⁷ Given the shortage of available crews, ships are often understaffed causing dangerous working conditions. Accordingly, if ships required smaller crews, it could reduce or eliminate those dangerous conditions.³⁸ Further worker improvements could result from reducing the strain from repetitive or high focus tasks, while land-based operations reduce exposure to hazardous conditions, can provide a more predictable work schedule, and can diversify the pool of applicants historically under-represented in the industry such as women and people with diverse abilities.³⁹

In addition, long periods of crew isolation on vessels at sea may produce an unbalanced power dynamic, resulting in obstacles to reporting and responding to problems such as harassment, sexual misconduct, forced labor and other labor law violations.⁴⁰ Without the need for a bridge, more maritime welfare facilities could be implemented for crews. It has been noted that “changing from a working role to a leisure time role enhances the individual’s competence in dealing with occupational stress.”⁴¹ Autonomous ships provide an opportunity to enhance conditions for workers and compliance with the Maritime Labour Convention – the maritime workers’ equivalent to a Bill of Rights.⁴²

IV. Conclusion

To transition to a sustainable future for maritime shipping, the IMO should reconsider allowing for scrubbers in its carbon fuel tax. The tax proceeds can be utilized to advance maritime shipping technology, including the implementation of autonomous ships. These ships would reduce GHG emissions, improve port efficiencies, reduce the frequency of whale strikes, reduce noise pollution, and improve maritime working conditions. Instead of steering the maritime industry to implement technology that pollutes the ocean, the IMO should encourage technology that enhances our seas. 



Endnotes

- 1 Timothy Nash, *The Response of the International Shipping Industry to Global Climate Change*, 44 J. Mar. L. & Com. 29 (2013).
- 2 *Id.*
- 3 Kyoto Protocol to the United Nations Framework Convention on Climate Change, *Article II, Section II*, 2303 U.N.T.S. 162. (Dec. 10, 1997).
- 4 IMO, *IMO2020 Fuel Oil Sulphur Limit - Cleaner Air, Healthier Plane*, <https://www.imo.org/en/MediaCentre/PressBriefings/Pages/02-IMO-2020.aspx> (last visited Apr. 18, 2024) (hereinafter "IMO2020"); Bryan Comer, *Scrubbers On Ships: Time To Close The Open Loop(Hole)*, THE INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION (June 18, 2020) <https://theicct.org/scrubbers-on-ships-time-to-close-the-open-loop-hole/>; Hugo Dixon, *Shipping Tax Could Yield \$100 Billion Climate Windfall*, REUTERS (June 12, 2023), <https://www.reuters.com/breakingviews/shipping-tax-could-yield-100-blm-climate-windfall-2023-06-12>.
- 5 *Id.*
- 6 Gilbert E. Metcalf & David Weisbach, *The Design Of A Carbon Tax*, 33 Harv. Envtl. L. Rev. 499, 501 (2009). Revised Strategic Plan for the Organization for the six-year period 2024 to 2029, Resolution A.1173(33), IMO (Dec. 6, 2023).
- 7 Danielle Gabay, Roe Furman, & Dov Greenbaum, *Autonomous Ships: Engines of Environmental Protection*, 47 Tul. Mar. L. J. 403, 415 (2023) (hereinafter "Gabay et al.>").
- 8 IMO2020, *supra* note 4; Anna Lunde Hermansson, et al., *Strong economic incentives of ship scrubbers promoting pollution*, 7 NATURE SUSTAINABILITY 812 (May 7, 2024), <https://www.nature.com/articles/s41893-024-01347-1> (hereinafter "Hermansson et al.>").
- 9 Richas Syal, *Shipping's Dirty Secret: How 'Scrubbers' Clean the Air – While Contaminating the Sea*, GUARDIAN (Jul. 12, 2022 05.45 EDT), <https://www.theguardian.com/environment/2022/jul/12/shippings-dirty-secret-how-scrubbers-clean-the-air-while-contaminating-the-sea>.
- 10 Hermansson et al., *supra* note 8.
- 11 Global update on scrubber bans and restrictions, INT'L COUNCIL ON CLEAN TRANSP. (June 2023), https://theicct.org/wp-content/uploads/2023/06/Scrubbers_policy_update_final.pdf.
- 12 Thalys Zis, Kevin Cullinane & Stefano Ricci, *Economic and environmental impacts of scrubbers investments in shipping: a multisectoral analysis*, 49 Maritime Policy and Management 1097, 1106 (June 26, 2021), <https://www.tandfonline.com/doi/full/10.1080/03088839.2021.1937742>.
- 13 *Pac. Merch. Shipping Ass'n v. Goldstene*, 639 F.3d 1154, 1158 (9th Cir. 2011), cert. denied, 567 U.S. 934 (2012).
- 14 *Id.*
- 15 Camilla Carraro, *Global Update on Scrubber Bans and Restrictions*, THE INTERNATIONAL COUNSEL ON CLEAN TRANSPORTATION (June 23 2023), <https://theicct.org/publication/marine-scrubber-bans-and-restrictions-jun23/>.
- 16 John Irish, *Shipping emissions tax plan backed by some 20 countries at Paris summit*, REUTERS (June 23, 2023 11:24 EDT) <https://www.reuters.com/sustainability/shipping-emissions-tax-plan-backed-by-some-20-countries-paris-summit-2023-06-23/> (hereinafter "Irish").
- 17 IMO approves net-zero regulations for global shipping, IMO (April 11th 2025), <https://www.imo.org/en/MediaCentre/PressBriefings/pages/IMO-approves-netzero-regulations.aspx>.
- 18 Irish, *supra* note 16.
- 19 Gabay et al., *supra* note 7, at 405.
- 20 *Id.* at 415.
- 21 Development of a Goal-Based Instrument for Maritime Autonomous Surface Ships (MASS) Report of the MSC-LEG-FAL Joint Working Group on Maritime Autonomous Surface Ships (MASS) on its second session, IMO (May 2, 2023).
- 22 *Id.*
- 23 Gabay et al., *supra* note 7, at 406.
- 24 Wenjun Zhang, Yingjun Zhang & Chuang Zhang, *Research on risk assessment of maritime autonomous surface ships based on catastrophe theory*, 244 RELIABILITY ENGINEERING & SYSTEM SAFETY 109946 (Apr. 2024) (hereinafter, "Zhang et al.>").
- 25 Gabay et al., *supra* note 7, at 410 (2023).
- 26 *Id.* at 444.
- 27 Dominick Reuter, *There's Already a Queue Of Cargo Ships Backing Up at US Ports*, BUSINESS INSIDER (Oct. 3rd, 2024), <https://www.businessinsider.com/queue-of-cargo-ships-backing-up-at-us-ports-2024-10>.
- 28 Gabay et al., *supra* note 7, at 430.
- 29 *Id.* at 446.
- 30 *Id.*
- 31 *Id.* at 437.
- 32 *Id.* at 444.
- 33 *Id.*
- 34 *Id.*



- 35 ICS network launches global campaign to drive seafarer recruitment, ICS (June 26, 2023), <https://www.ics-shipping.org/press-release/ics-network-launches-global-campaign-to-drive-seafarer-recruitment/>. The ICS is “a global trade association representing shipowners and operators across the world, advocating for the shipping industry on international regulatory issues and promoting best practices within the maritime sector.” ICS, <https://www.ics-shipping.org/>.
- 36 *Coast Guard: Autonomous Ships and Efforts to Regulate Them*, U.S. Government Accountability Office (Aug 8, 2024), <https://www.gao.gov/assets/gao-24-107059.pdf>.
- 37 IMO, Development of a Goal-Based Instrument for Maritime Autonomous Surface Ships (MASS), Report of the MSC-LEG-FAL Joint Working Group on Maritime Autonomous Surface Ships (MASS) (second session) (May 2, 2023).
- 38 Zhang et al., *supra* note 24.
- 39 European Maritime Safety Agency (2023): CMOROC Identification of Competences for MASS Operators in Remote Operation Centres, EMSA, Lisbon (2023); Xue Li & Kum Fai Yuen, *A Human-Centred Review on Maritime Autonomous Surface Ships: Impacts, Responses, and Future Directions*, 44 *TRANSPORT REVIEWS* 791-810 (July 3, 2024).
- 40 Maritime Labour Convention, 2006, as amended, Geneva, 94th ILC (Aug. 20, 2013). Kate Whiting, *Stuck at sea: How to save the world's seafarers and the supply systems they support*, *WORLD ECONOMIC FORUM* (June 19, 2020), <https://www.weforum.org/stories/2020/06/shipping-seafarers-covid-19-mental-health-supply-systems/>; Current Developments on Maritime Matters, International Labor Organization (Dec. 19, 2024).
- 41 Marcus Oldenburg & Hans-Joachim Jensen, *Maritime Welfare Facilities - Utilization and Relevance for the Compensation of Shipboard Stress*, 14 *J. OCCUP. MED. TOXICOL.* 11 (Apr. 11th 2019), <https://pubmed.ncbi.nlm.nih.gov/articles/PMC6460816/>.
- 42 Maritime Labour Convention, 2006, as amended, Geneva, 94th ILC (Aug. 20, 2013).

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