

RACE TO ZERO:

How the Indo-Pacific region can accelerate towards net-zero emissions in the maritime industry

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AIMING FOR NET-ZERO EMISSIONS FROM INTERNATIONAL SHIPPING

Maritime transport is essential to global trade, carrying over 80% of goods worldwide (UNCTAD, 2021). However, it also contributes 2.89% of greenhouse gas (GHG) emissions (Fourth Greenhouse Gas Study, 2020) which negatively impacts the environment.

The global effort to reduce GHG emissions led the International Maritime Organization (IMO) to adopt stricter climate strategies. The Initial Strategy was approved in 2018, and amended in 2023, which is now referred to as the 2023 Revised Strategy. Its main goal is to:

"REACH NET-ZERO GHG EMISSIONS BY OR AROUND 2050" (IMO, 2023)

while ensuring a **fair and equitable transition**. Thus, the IMO must implement mid-term measures including **technical** and **economic** elements.

WHAT ARE THE CURRENT INITIATIVES TO DECARBONIZE IN THE INDO-PACIFIC REGION?

9.3%

(UNESCAP, 2024)

ASIA-PACIFIC TRANSPORTATION SECTOR'S CONTRIBUTION TO GHG EMISSIONS

Due to this data, there are national and regional agreements fostered to sustain green shipping in Asia. A notable example is in **Japan**, the decarbonization efforts are focused on the "**Shipping Zero Emission Project**," which promotes technological advancements of alternative fuels to achieve net zero GHG emissions in international shipping.

KEY POLICY MESSAGES

- Net-Zero GHG Emissions goal by 2050 of the 2023 Revised Strategy needs **just** and **equitable transition**.
- The Indo-Pacific region countries similarly face **financial, technical** and **social challenges** in maritime transport decarbonization.
- The region should establish **Green Shipping Corridors** to accelerate decarbonization and strengthen regional cooperation.
- There's an urgent need to **update seafarer training** on alternative fuel and **increase gender-fair recruitment** in management, technical and technological roles.
- **National leaders, policy and decision makers** are the **key drivers** of social, political and legal aspect, thus, **urgency and timeliness** of action are crucial.

In the **Pacific**, the South Pacific Community (SPC) launched the **2015 Green Pacific Ports** initiative in collaboration with the Secretariat of the Pacific Regional Environment Programme (SPREP) and the IMO, followed by the Pacific Blue Shipping Partnership (PBSP).

The application of the IMO's Revised Strategy can increase food imports **up to**

USD 4.2 MILLION

 (MCST, 2025)

TRADE COST AS A DIRECT RESULT OF THE MIDTERM MEASURES.

WHAT ARE KEY ISSUES IN DECARBONIZING MARITIME TRANSPORT?

Socio-political Issues

LAGGING SEAFARER CREW TRAINING

Without appropriate training, **coastal communities and port workers may face new occupational hazards** linked to the handling of alternative fuels. The uncertainty surrounding the future of maritime jobs and the unclear career pathways in a decarbonized shipping industry may **discourage the younger generation from pursuing maritime careers**, exacerbating labor shortages.

UNDERREPRESENTATION OF WOMEN SEAFARERS AND PORT PERSONNEL

<2% Women seafarers in the global workforce

(BIMCO/ICS, 2021)

The **low representation of women**, particularly in technical and operational positions, limits the inclusivity to green transition.

IMPACT ON FOOD SECURITY

Fuel shortages and price volatility has impacts on local communities across Pacific Island Countries (PICs) and on productive sectors such as fisheries, which are key contributors to food security, local livelihoods, and national economies in the region.

Econo-legal Issues

COMPETING NATIONAL PRIORITIES AND INCONSISTENT TECHNICAL/ FINANCIAL CAPACITIES

Only **a fraction of the national budgets** of developing countries in the Indo-Pacific are available to refurbish or replace aging and unstable power-supply infrastructure and vessels.

UNCERTAINTY IN INVESTING IN DECARBONIZATION

Scaling up **investment in new ships, energy supply, and bunkering supply** is crucial for emissions reductions.

USD 8 TO 28 BILLION ADDITIONAL INVESTMENTS ARE NEEDED TO DECARBONIZE

(UNCTAD, 2023)

Fleet renewal needs, concerns over **shipbuilding yard capacity, and higher building prices** are posing challenges for shipowners, thus complicating their investment decisions. If this transition is not managed equitably, increased shipping costs could worsen economic vulnerabilities and reduce access to essential supplies, affecting food security and healthcare availability.

Techno-environmental Issues

MARINE POLLUTION

The shift from fossil fuels to alternative fuels poses its own environmental risks as this requires specialized intensive handling to prevent **accidental spills which would harm marine ecosystems**. For example, ammonia spills are highly toxic to aquatic life and would have devastating impacts on the Indo-Pacific's fragile and rich marine environments.



TECHNOLOGICAL READINESS AND SCALABILITY

Technologies for green shipping remain uncertain and expensive. Many nations in the Indo-Pacific have inadequate **technological capacity** to produce or deploy these innovations at scale.

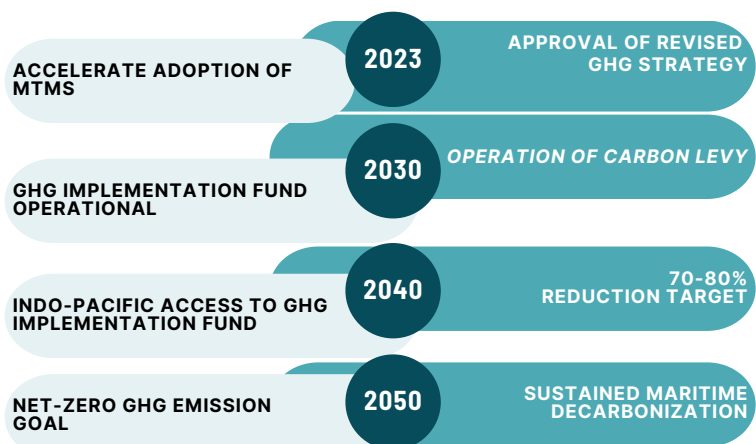
Additionally, infrastructure for alternative fuels, such as bunkering facilities is sparse across the region. Socially, technology gaps hinder equitable participation in the green transition, especially for remote island communities. In particular, Pacific Islands have a **lack of data to determine actions** relating to decarbonization.

CALL TO ACTION: SUSTAINING MOMENTUM OF DECARBONIZATION IN MARITIME SHIPPING

	Recommendations	Expected Impacts
S O C I O - P O L I T I C A L	Expedite the convening of IMO Member States for the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW)	<ul style="list-style-type: none"> • OUTPUT: A standardized training for seafarers on alternative fuels based on adoption of mid-term measures. • OUTCOME: Member States will have a framework for updating their curriculum design in maritime colleges and training institutions. This ensures the safe operation of alternative fuels and compliance with evolving maritime decarbonization regulations.
	Encourage the recruitment of women in seafaring, port management, and inshore technological roles through training and scholarship programs	<ul style="list-style-type: none"> • OUTPUT: Increase government scholarships and programs aimed at recruiting women in seafaring and port management. The maritime industry can also incentivize women's recruitment through shore-based technological roles to avoid stigmas against onboard harassment. • OUTCOME: This leads to a more inclusive and resilient maritime workforce, ensuring equitable gender integration. Particular focus should be given to increasing women's roles in technical and management positions.
	Enhance food security through the certification of products transported by decarbonized vessels	<ul style="list-style-type: none"> • OUTPUT: Sustained financial support through the IMO GHG Implementation Fund to accelerate activities that facilitate the maritime sector's transition through the certification guidelines provided by IMO. • OUTCOME: This ensures transparency and promotes the adoption of low-emission shipping, reducing the carbon footprint of global food supply chains.
E C O N O - L E G A L	Develop National Action Plans (NAPs) on decarbonization and integrate it into Nationally Determined Contributions (NDCs)	<ul style="list-style-type: none"> • OUTPUT: Developed National Action Plans (NAPs) on decarbonization aligned with Nationally Determined Contributions (NDCs) under the Paris Agreement's climate responsibilities of each country, including domestic shipping. • OUTCOME: Ensures that the Indo-Pacific countries have tailored programs and activities to achieve IMO's goal of net-zero emissions by or around 2050. This allows them to highlight their roadmap in light of national circumstances.
	Access existing international financial mechanisms	<ul style="list-style-type: none"> • OUTPUT: Application to the ADB's Green Ports and Maritime Decarbonization Fund. Pushing for an ambitious carbon levy price will increase accessibility to the IMO's GHG Implementation Fund. • OUTCOME: Accelerates maritime security and economic growth by encouraging private sector investment, long-term financial stability, and climate resilience, making green projects more viable and cost-effective.

T E C H N O - E N V I R O N M E N T A L	<p>Adopt Public-Private Partnerships (PPP) to develop Green Shipping Corridors</p>	<ul style="list-style-type: none"> OUTPUT: Adoption of PPP's to establish Green Shipping Corridors enabling low-carbon shipping through investment in sustainable infrastructure and collaborative innovation through legally binding agreements. OUTCOME: Green Shipping Corridors in the Indo-Pacific countries strengthens regional shipping as well as increasing economic activities, environmental stewardship and food security.
	<p>Improve data collection and analysis for Pacific Island Countries (PIC)</p>	<ul style="list-style-type: none"> OUTPUT: A standardized monitoring and evaluation framework for each PIC as a result of robust data collection and research. OUTCOME: More investment to data collection, research collaboration with development partners leads to a data analysis and findings which allows more informed decisions.
	<p>Promote the Green Port system to scale up port facilities and infrastructure for alternative fuels and technologies in line with environmental assessments.</p>	<ul style="list-style-type: none"> OUTPUT: Environmentally compliant facilities, technology and infrastructures for each country in the Indo-Pacific region based on national circumstance and institutional policies and guidelines from the Ministry of Environment and Ministry of Technology. OUTCOME: The use of alternative fuels will complement existing carriage requirements and future IMO-related Codes on fuels. Having certified facilities and technologies ensures safety and readiness in handling alternative fuels.
	<p>Optimize Maritime Single Window (MSW) as an AI-driven technology designed to monitor GHG emissions</p>	<ul style="list-style-type: none"> OUTPUT: Employed AI-driven technology to continuously monitor greenhouse gas emissions from vessels. For instance, Japan has implemented this technology in its ports, enabling real-time emission tracking and promoting greener shipping practices in line with its environmental targets. OUTCOME: MSW will ensure compliance with international regulations and contribute to global sustainability goals in quantifiable manner.

WHAT IS THE TIMEFRAME OF DECARBONIZATION RECOMMENDATIONS?

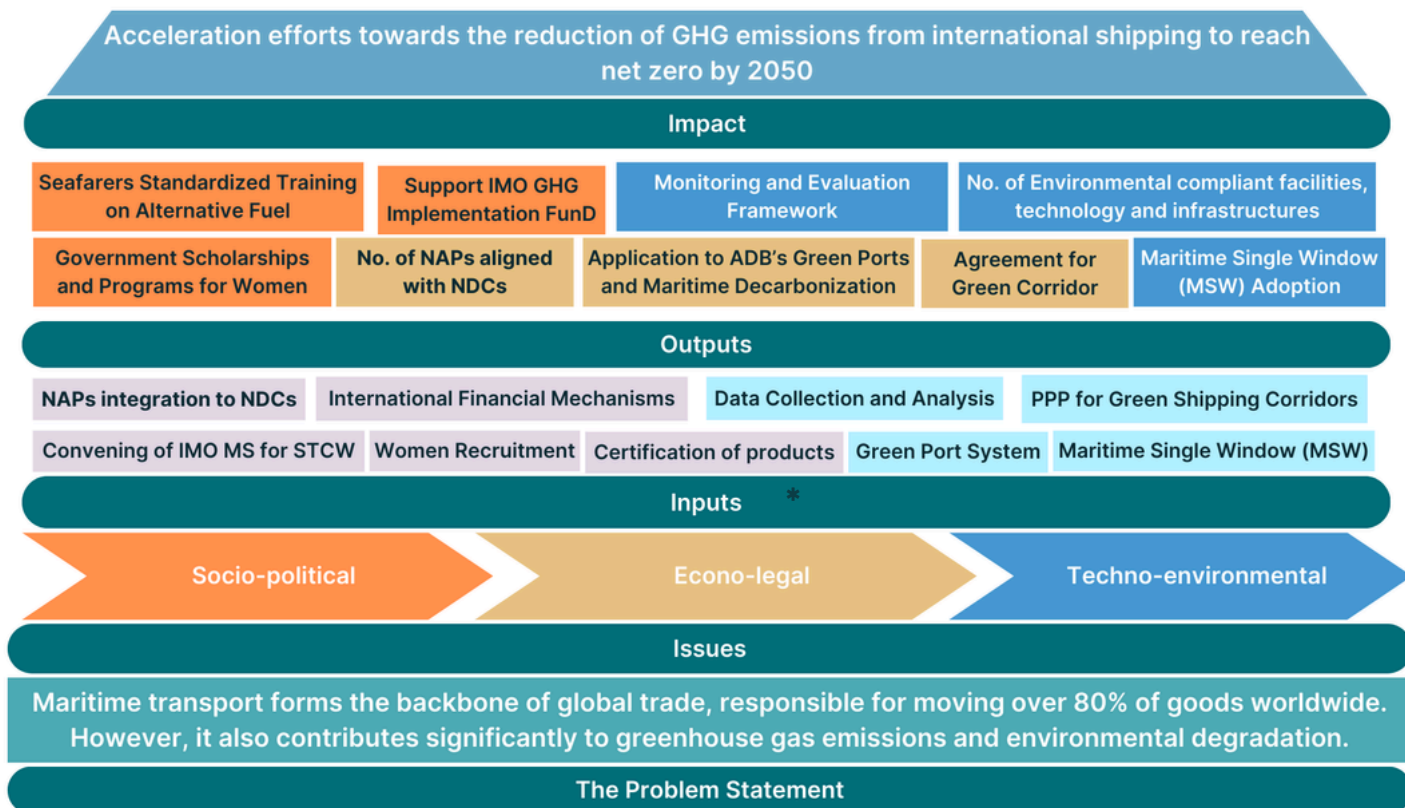


CHECKPOINT - ARE WE THERE YET?

As we approach the 2030 target and much progress to be done, the 20% - 30% target seems out of reach.

If this target is not reached, then we need to accelerate activities to reach the net-zero goal by 2050.

THEORY OF CHANGE FOR RACE TO ZERO ACCELERATION EFFORTS



TIMEFRAME LEGEND: SHORT TERM LONG TERM

CONCLUSION

Maritime transportation significantly contributes to global GHG emissions. To address the issue on the increasing carbon maritime footprint, IMO adopted the 2023 Revised Strategy on net-zero emissions by 2050.

Countries in each region have their own initiatives to reduce their GHG impact. They also have best practices in which the Asia and Pacific regions can learn from each other. However, intersectional socio-political, econo-legal and techno-environmental issues slow down the progress to net-zero emissions.

Based on these categories, there are nine (9) key recommendations set to accelerate activities toward net-zero which are shown in the Theory of Change as inputs and tangible outputs that will lead to an impact towards the reduction of GHG emission from international shipping by 2050.

RESOURCES

To know more about the existing practices in decarbonization in the Indo-Pacific, please click here.

KEY POINTS

1. Decarbonization efforts are expensive, thus economic incentivization and financial mechanisms should be prioritized and accessible.
2. National leaders, policy and decision makers are the key drivers of social, political and legal aspects, thus, urgency and timeliness in action are crucial.
3. Adaptation from traditional fuels to alternative fuels may disproportionately affect marginalized people, therefore, mainstreaming gender equality, disability and social inclusion (GEDSI) is essential.
4. The maritime workforce are the most affected in decarbonization, thus continuous capacity development, adaptable curriculum and seafarer recruitment must be prioritized.
5. The ocean environment must not be jeopardized in the decarbonization of maritime shipping.

ANNEX A



REFERENCES



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