

Reflecting on Net Zero Emissions in Bangladesh Ports and Shipping Routes

Concluding Part



Once completed, the under-construction Matarbari Deep Sea Port holds promise to be a regional hub. This port is taking proactive steps to reduce carbon emissions, such as installing energy-efficient equipment and machinery. Furthermore, the direct arrival of mother vessels at the pier, meeting the need for lighter ships, can significantly reduce GHG production. These initiatives inspire hope for a more sustainable future in the shipping industry.

According to the UN report, the world's transport sector is responsible for approximately one-quarter of GHG emissions, and international ports and shipping alone contribute to over 3% of the global GHG discharge, which is assumed to increase markedly if there are no mitigation measures. Following the target of achieving net-zero carbon emissions by 2050, the large uncertainties and challenges of a low-carbon transition in the shipping industry have raised concerns in the international scientific community. According to the UNCTAD, the shipping sector's GHG emissions have risen 20% over the last decade, and operates an aging fleet that runs almost exclusively on fossil fuels.

If no mitigation action on emissions is taken, it might increase to 130% of 2008 levels by 2050, according to the Review of Maritime Transport of UNCTAD. While the earth is going through the most critical moment for climate change and global warming, any possibility of adding extra CO₂ is a matter of great concern. Being one of the most important littoral of the Indian Ocean, Bangladesh should step forward to make the ports and shipping sector more efficient and sustainable, reducing carbon emissions. Currently, the IMO is working as the parent organization to reduce GHG emissions from shipping. In July 2023, IMO Member States adopted the 2023 IMO Strategy on the reduction of GHG emissions from ships. The updated IMO Strategy clearly establishes a date by which the use of fossil fuels must end by 2050 with indicative checkpoints for lowering GHG emissions by 20% (striving for 30%) by 2030 and 70% (striving for 80%) by 2040 (imo.org).

At COP28, UNCTAD advocated for system-wide collaboration, swift regulatory intervention and stronger investments in green technologies and fleets. However, it is a matter of fact that complete decarbonization by 2050 will necessitate significant financial outlays and may result in increased costs for maritime logistics, which could burden financially weaker countries that depend on shipping, such as small island developing states and nations like Bangladesh as around 85% of the export earnings from RMG sector of the nation is directly dependent upon the shipping sector of Bangladesh. To ameliorate the cost, these countries must advance beyond cleaner fuels and quickly adopt digital technologies like blockchain and AI to increase the sustainability and efficiency of the fleet. It's worth mentioning that AI can better monitor and track data related to greenhouse emission reduction. It can also optimize routes and increase fuel efficiency.

Blockchain technology can improve regulatory compliance by offering transparent waste management and emissions records.

In this regard, it must be mentioned that the major flag states-Panama, the Marshall Islands, and Liberia-should be the most responsible for enforcing the new green shipping regulations, as these three countries together are responsible for one-third of the carbon emissions from shipping. However, a significant portion of the financial obligation for bunkering facilities, alternative fuels, and more ecologically friendly ships rests with the ship owners, ports, and energy-producing industries.

In the Journey of Achieving the Target of Net Zero emission, some technologies are widely discussed to enhance efficiency and decarbonize the shipping sector. These include improved ship and port design, alternative fuels, carbon capture and storage, digital fleet management systems, etc. Instead of traditional shapes of the ships, sharp, slender ship designs along with wind-assisted propulsion may lead to a 25% decrease in fuel use and greenhouse gas emissions (tradefinanceglobal.com). New shipping technology addresses more than just the vessels themselves. Electrification of the ports is a fantastic way to decarbonize the cargo industry, allowing electric ships to recharge while docked. Aligned with the environmental sustainability goal of Strategic Plan 2021-2025, the Port of Barcelona's Nexigen plan, which aims to electrify the city's docks to reduce greenhouse gas emissions, could be an appropriate example. Carbon capture and storage systems in ports can also help decarbonize the industry. Although alternative fuels can be a promising solution to reducing emissions from shipping, their production and adaptation are in the early stages. Alternative options include methanol, ammonia, biofuel, electric battery, and green hydrogen.

Electrolyzers on the ship can separate the water into hydrogen and oxygen atoms, making hydrogen the most appealing alternative fuel due to its energy density, lightweight, and nearly infinite potential. However, Transport, storage, and production costs are the primary obstacles to hydrogen's use as a shipping fuel, as it requires an appropriate bunkering infrastructure. Extensive research is underway to develop energy-efficient methods for generating hydrogen from water. Besides, nuclear fuel is a proven technology that could be readily used in merchant ships to eliminate CO₂ emissions. A small nuclear reactor would be required, with a life of many years, removing the need for ships to refuel or carry bunkers. Russia successfully operates several nuclear ice-breaking vessels in the Arctic.

As a developing maritime country, Bangladesh can address technological aspects while procuring new vessels and using low-sulfur diesel to control carbon emissions from shipping. Additionally, the concerned ministries and the ports and shipping authorities of Bangladesh can consider the following:

Participating in global green shipping initiatives and coalitions, such as the IMO's Green Voyage 2050 project, to leverage international expertise and funding for sustainability projects. Investing in R&D to explore innovative solutions for reducing maritime emissions, such as wind-assisted propulsion, solar power integration, and hydrogen fuel

cells. Training maritime professionals on best energy efficiency and emission reduction practices. This includes crew training on eco-friendly navigation and operational practices. Partnering with private sector stakeholders to develop and implement sustainable shipping practices. Collaboration with shipping companies, technology providers, environmental organizations, and maritime think tanks like BIMRAD can conduct scientific research to foster innovative solutions.

As it is existential, Bangladesh may strive for the most advanced technologies and, if needed, modify/reform policies for implementation to reduce its contribution to global carbon emissions, specifically from the ports and shipping sectors, by at least 30% by 2041. Thus, it is expected from the current interim government that they would have the coup d'oeil- the strategic glance to perceive the country's aspiration to enter into the elite club of 'developed nations' by 2041. Post 5 August, Bangladesh can set a new sail with the motto "Clean energy, Green Shipping for Thriving the Monsoon."

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