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A sustainable waste management approach for passenger ships: The role of carbon credit prediction model in creating a Smart Bangladesh

Md. Mahmudul Hasan Akib[1], Zobair Ibn Awal[1]* and Mohammad Tanvir Hossain[2]*

[1]Department of Naval Architecture and Marine Engineering, Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh

[2]Reactron Bangladesh Private Limited, Motijheel, Dhaka-1000, Bangladesh

Corresponding author email: zobair@name.buet.ac.bd; mth@reactronglobal.com

Bangladesh's intricate river network, spanning nearly 230 rivers, serves as vital transportation routes for millions annually. Despite ratifying international conventions on marine pollution, the absence of a National Marine Environmental Protection Policy has led to the habitual dumping of untreated waste, emphasizing the need for sustainable waste management. This research integrates a Carbon Credit Prediction model within passenger ships, providing transformative solutions with a biogas-composting plant and a plastic segregation chamber. This model integrates a biogas, composting plant within a passenger ship, and a plastic segregation chamber to prevent water and air pollution and promote sustainable practices. The biogas and composting plant effectively process organic waste from ships, producing biogas for cooking as a safe and sustainable alternative to Liquefied Petroleum Gas (LPG). The plastic segregation chamber ensures proper storage and sale of plastic waste for recycling, reducing the need for new plastic production. This innovative approach not only reduces waste-induced carbon footprints but also fosters a circular economy. Positioning Bangladesh for a smarter and greener future, the model aligns with the nation's commitment to international conventions, contributing to a resilient and environmentally conscious maritime sector. In harmony with Sustainable Development Goals (SDGs), it addresses long-standing waste management issues, emphasizing environmental protection by reducing greenhouse gas emissions and promoting energy independence. This research advances a strategic pathway toward a sustainable and intelligent infrastructure, addressing the pressing issues in Bangladesh's maritime sector and contributing to the broader vision of "Smart Bangladesh".

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Potentiality of deep-processing and industrialization of major commercial fishes in Bangladesh

Md. Rashidul Islam* and Mst Irin Akter Lima

Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200, Bangladesh

Corresponding author email: mrislam_fbg@hstu.ac.bd

The top six fishes out of approximately 740 species from each freshwater or seawater habitat were primarily considered major commercial fishes based on their annual production in Bangladesh, with zero industrial discards and industrialization. In this study, pangas, hilsha, tilapia, and rohu, followed by silver carp, mrigal, and catla, primarily showed more industrial potential. The amount of edible (muscle) and non-edible (by-products) parts was recorded as 48.8±2.8% and 49.2±2.7%, respectively. Thus, approximately 1.17 million MT of muscle and 1.18 million MT of by-products would be generated per year in Bangladesh. Very little industrial usage of fish muscle was reported in this country. In contrast, there is no true information on its by-product utilization. Thus, a new technology for the transformation of fish by-products into high-value-added products is essential in Bangladesh. Fish by-products were categorized as complex-mixture, protein-rich, and protein-poor; it would be helpful to develop an easy, simple, and industrially suitable method for industries. Finally, this very preliminary information can be a basis for exploiting the major commercial fishes, such as edible or non-edible parts, which might prompt the fisheries sector and industrial growth in Bangladesh.