Global Shipping's Green Turn

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Global Shipping's Green Turn: India’s Strategic Response

Context:

The global maritime sector, responsible for nearly **3% of global greenhouse gas emissions**, is undergoing a major shift to achieve **net-zero emissions by 2040–2050**. This involves transitioning from conventional fuels like **Very Low Sulphur Fuel Oil (VLSFO)**, **diesel**, and **LNG**, to **green fuels** such as **green ammonia**, **e-methanol**, and **biofuels**.
This shift presents a strategic opportunity for **India** to emerge as a **producer, exporter, and user** of green marine fuels.

Green Fuel Production and India’s Potential

- **Green hydrogen** is produced using **electrolysis of water** powered by **renewable energy**.
- In shipping, more **stable and energy-dense alternatives** are preferred:
    - **Green Ammonia** – derived from green hydrogen and nitrogen.
    - **Green Methanol** – produced using green hydrogen and captured industrial CO_2.
- India is **promoting green ammonia** as part of its strategy to **reduce LNG imports**, especially in **fertiliser manufacturing**.

Green Methanol: A Preferred Transition Fuel in Shipping

- Green methanol is gaining preference due to:
    - **Ease of handling**.

    - **Lower emissions** – around **10% of emissions** compared to conventional fuels.

- It is more practical than green ammonia as it **requires minimal engine modification**.

- Over **360 methanol-capable ships** are operational or under construction, backed by major companies like **Maersk**, **CMA CGM**, and **Evergreen**.

Cost and Supply Constraints of Green Methanol

- Green e-methanol costs about **$1,950 per tonne** in **Singapore (as of Feb 2025)**, while **VLSFO costs around $560 per tonne**.

- High costs are due to:

    - **High energy requirement**: **10–11 MWh per tonne of methanol**.

    - **Capital-intensive infrastructure** for electrolysers.

- **Demand is expected to reach 14 million tonnes by 2028**, but supply may fall short at **11 million tonnes**, increasing **price pressures**.

India’s Strategy for Shipping Decarbonisation

- India is working to **decarbonise domestic shipping** by:

    - Promoting **green fuels** for container vessels.

    - Establishing **green fuel bunkering hubs** at **Tuticorin (VOC Port)** and **Kandla**.

- Plans include exporting green fuels to **Singapore**, which handles **25% of the world’s ship refuelling needs**.

- With a strong base in **solar energy** and **industrial capacity**, India aims to become a **global hub for green marine fuels**.

Challenges in Building India's Green Marine Fuel Ecosystem

- India is currently dependent on **imported electrolysers and solar panels**.
- However, India's **solar capacity** grew from **2.82 GW (2014)** to **105 GW (2025)**, showing the effectiveness of **sovereign guarantees and policy support**.
- Key measures needed:
  - **Sovereign guarantees** for cheaper international financing.
  - **PLI schemes** for electrolyser manufacturing.
  - Incentives for **Carbon Capture, Utilisation and Storage (CCUS)**.
  - Investment in **industrial CO_2 sourcing** and **localised supply chains**.
- **Multilateral development banks** offering loans at **4% interest** (vs **11–12% from Indian lenders**) can reduce project financing costs.

Reviving Indian Shipbuilding through Green Fuel Integration

- India is promoting **foreign collaborations** in shipbuilding, especially with **South Korea and Japan**.
- Focus:
  - **Building new vessels** compatible with green fuels.
  - **Retrofitting existing ships**.
- India has allocated **$10 billion** to procure **110 ships**, with **10–20%** planned to be:
  - **Green fuel-capable**.

    - **Built in Indian shipyards**.
    - **Flying the Indian flag**.
- This aligns domestic shipbuilding with **global decarbonisation efforts**.