## SUMMARY OF SESSION: GREEN GATEWAYS: PIONEERING GREEN TRANSITIONS OF PORTS

**Chair, Convenor, Speaker and Panelists, Experts**

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| **Session Chair** | Shri. Rajkumar Beniwal | VC, CEO, GMB |
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| **Convener** | Capt. A.K.Azad | Nautical Advisor (I/C) |
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| **Panelists** | Shri. Surash Babu | Chief General Manager (M&EE) |
| | Shri. Niteen M. Borwankar | Chief Manager Mechanical & Electrical engineering and CEO – SEZ , JNPA |
| | Shri. Rajeev Agarwal | Ex CEO & MD, Essar Ports |
| | Shri. Girish | Area Business Director, South East Asia and Indian Subcontinent, DNV |
| | Shri. Daljit Singh Kohli | India Representative for Port of Antwerp & Bruges |
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| **Experts** | Shri. Shobhit Kapoor | M&O Operations Manager SAW. Lloyd's Register India |

**Coordinators**

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| **DGS** | Capt. Anish Joseph | Dy NA, DGS |
| **IMEI** | Shri Tarique Mulla | IMEI |

**Session summary**

The panel discussed the various challenges and opportunities while transition to Green Ports . The

discussions also provided valuable insights into the future of sustainable port operations, highlighting the importance of innovation, collaboration, and investment needed. The Challenges included high initial investments, technological integration complexities , regulatory gaps and the Shortage of skilled workforce. In spite of the Challenges faced it was also discussed that there are substantial opportunities vide the Green transit such as Operational efficiency with virtue of Digitalisation and smart technologies, Environmental benefits, Global competitiveness as Green ports can attract more international business as well as opportunity for Public-Private Partnership.


**Discussion Highlights:**

1. **Green Ports:**
    - **Strategies and Technologies:** Discussion on the latest strategies and technologies to make ports more environmentally friendly.
    - **Implementation Challenges:** Addressing the challenges in implementing green initiatives at ports.

2. **Shore Power:**

    - **Emission Reduction:** Benefits of shore power in reducing emissions from ships while docked.
    - **Infrastructure Requirements:** Necessary infrastructure and investment needed for shore power implementation.

3. **Just-In-Time (JIT) Green Corridor:**

    - **Efficiency and Sustainability:** Enhancing port operations' efficiency and sustainability through JIT logistics.
    - **Coordination and Collaboration:** Importance of coordination among various stakeholders to achieve JIT logistics.

4. **Alternative Fuels Availability in Ports:**

    - **Types of Fuels:** Availability of renewable diesel, biodiesel, hydrogen, and other alternative fuels
    - **Infrastructure Upgrades:** Need for significant investment in port infrastructure to support alternative fuel storage and distribution

5. **Trucks in Ports Converting to Battery Operated:**

    - **Electrification Benefits:** Reduction in greenhouse gas emissions, air pollution, and noise levels
    - **Challenges and Solutions:** High initial costs and the need for extensive charging infrastructure**.**

6. **Ports as Catalysts for Producing Green Fuels:**

    - **Green Energy Hubs**: Ports playing a crucial role in the production, application, and distribution of green fuels like green methanol and ammonia
    - **Supporting Decarbonization:** Ports facilitating the transition to renewable energy sources and supporting global decarbonization goals

## Key Focus Areas:

- **Renewable Energy Integration:** Focus on strategies for adopting renewable energy sources such as solar, wind, and tidal energy in port operations to enhance sustainability and reduce carbon emissions.
- **Shore-to-Ship Power (Cold Ironing):** Discuss the implementation of cold ironing systems that allow docked vessels to draw power from the port grid, minimizing reliance on fossil fuels during berthing.
- **Energy-Efficient Cargo Handling:** Explore electrification and automation in cargo handling processes to improve energy efficiency and reduce operational costs in port activities.
- **Green Bunkering Infrastructure:** Emphasize the development of facilities for alternative fuels like LNG, hydrogen, and methanol to support the transition to greener maritime operations.

## Key Takeaways:

- **Holistic Environmental Approach:** Ports must address pollution beyond their boundaries, integrate stakeholders to reduce bottlenecks, and optimize operations across the logistics value chain.
- **Energy Transition & Electrification:** Standardize state-level electricity policies, leverage cost-effective renewable energy, implement solar and wind power mixes, and provide land for green power generation and alternative fuel production.
- **Green Fuel Production & Infrastructure:** Focus on reducing electrolyser costs, improving ammonia production efficiency, and developing ports as green hydrogen hubs, with Tuticorin's Green Hydrogen pilot project as a model.
- **Technology & Logistics Optimization:** Enhance efficiency through digitalization (real-time monitoring, sensors, digital twins), expand rail networks, and introduce electric/hydrogen trucks and tugs, while addressing trucking challenges.
- **Bunkering & Shore Power:** Promote shore power (cold ironing), utilize LNG bunkering as a near-term solution with a 2030 target, and transition to

hydrogen/ammonia bunkering by 2035, leveraging LNG terminals as low-hanging fruit.