Decarbonising India’s Logistics Sector

For Prelims: **Net zero emissions**, **Greenhouse gas (GHG)**, **National Logistics Policy (NLP)**, **PM Gati Shakti**, **Economic Survey 2023-24**, **Vision India@2047**, **World Bank’s Logistics Performance Index**.

For Mains: State of Emission from Logistics Sector, Challenges in Decarbonising Logistics Sector, Way Forward for Sustainable Logistics Sector, Key Issues Associated with India's Logistical Sector.

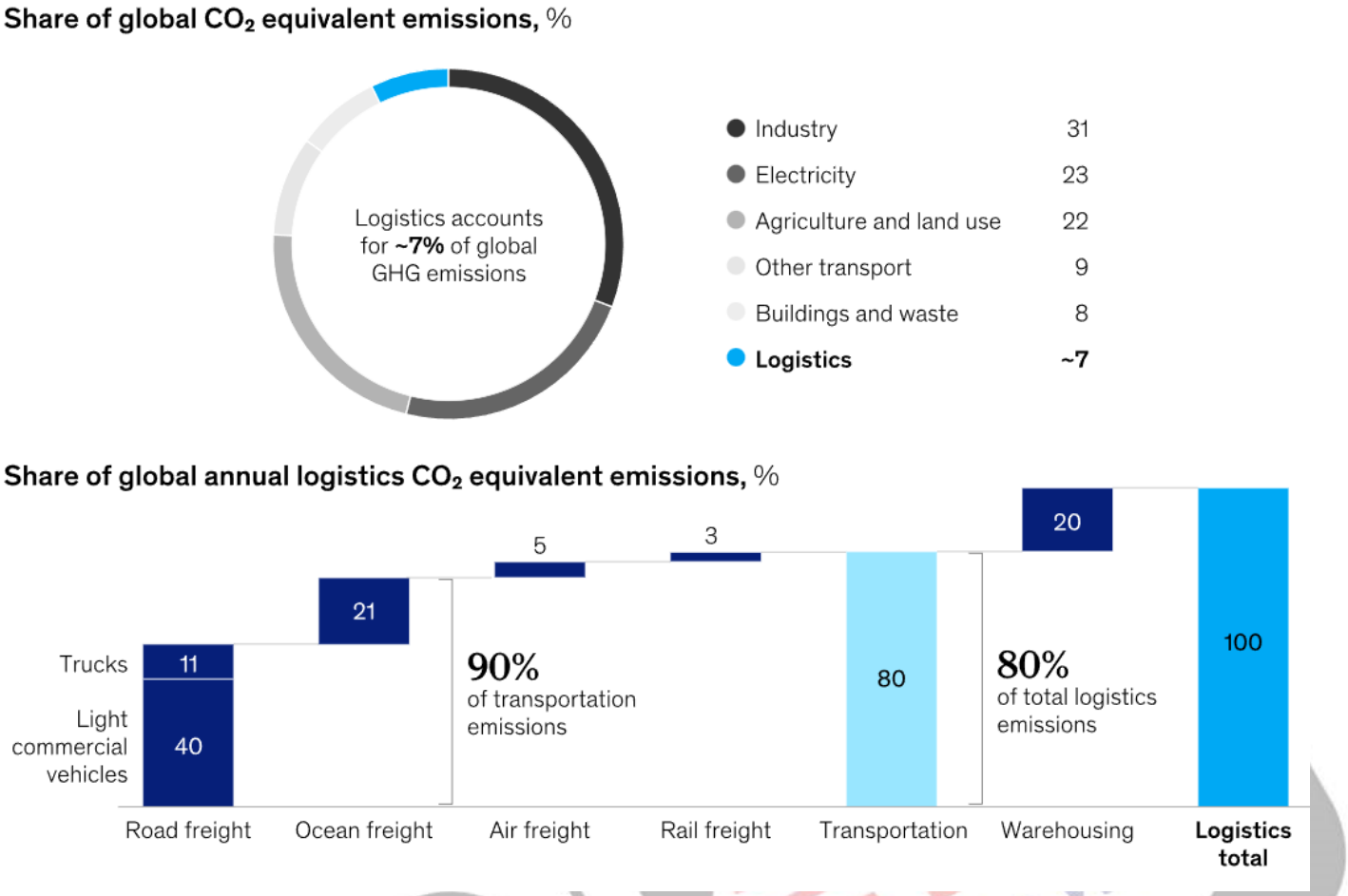
Source: TH

Why in News?

India’s logistics sector, vital for economic growth and **Vision India@2047**, is among the **most carbon-intensive**. With a **net-zero target by 2070,** greening logistics is key to **sustainable and inclusive development.**

What is the Current Emissions Profile of India’s Logistics Sector?

- **India: India’s logistics sector** contributes about **13.5% of the country’s total greenhouse gas (GHG) emissions**.
  - **Road transport** dominates, managing nearly **90% of passenge**r and **70% of freight movement,** and accounts for over **88% of sectoral emissions**, **trucks** alone contribute around **38% of CO_2 emissions** (IEA, 2023).
  - **Domestic aviation** contributes about **4% to emissions,** while **coastal and inland shipping** emit less than road freight. **Warehousing** also adds significantly due to high energy use.
  - The government plans to **triple inland waterway traffic** and **increase coastal shipping by 1.2 times by 2030,** risking **higher emissions if not managed sustainably.**
- **Global Scenario:**
  - Globally, the logistics sector accounts for around **7% of GHG emissions.**



What are the Major Challenges in the Decarbonising Logistics Sector?

- **Heavy Reliance on Road Transport**: In India, **roads dominate logistic**s due to **inadequate rail and multimodal linkages**. Roads carry **64.5% of freight** and serve **90% of passenger traffic in India.**
    - This high dependence on **diesel-fueled trucks** makes **rapid decarbonization technologically and economically challenging.**
- **Fragmented and Unorganized Sector:** India's logistics sector is **largely unorganized,** with over **85% of trucks owned by individuals or small operators**, which **hinders coordinated adoption of green technologies,** emission tracking, and data sharing, making large-scale decarbonization efforts difficult.
- **High Transition Costs & Limited Infrastructure:** Transitioning to EVs or hydrogen vehicles requires **significant upfront investment,** with **EVs costing 20-50% more than comparable Internal Combustion Engine (ICE) vehicles**.
    - Small fleet operators face **limited access to green finance**, and **low-carbon fuels are more expensive** than diesel, especially in emerging economies.
    - Additionally, the **scarcity of EV charging and hydrogen fueling stations**, along with **India's reliance on fossil fuels for over 70% of its electricity** (CEA, 2023), **hampers the effectiveness of electrification.**
- **Limited Adoption of Public Transport:** The u**nderdeveloped public transport infrastructure** and i**nfrequent services in many areas** limit the potential for using public transport for freight, leading to **continued reliance on carbon-intensive private vehicles** leading to **emissions and inefficiency in logistics operations.**

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What are the Government Initiatives for the Decarbonising Logistics Sector?

- **National Logistics Policy 2022:** It aims to **reduce logistics costs** to **8%-9% of GDP by 2030 (from 13-14% of GDP)** and be among the top 10 in the **LPI (Logistics Performance Index)** by 2030.
- **PM Gati Shakti National Master Plan:** It **integrates infrastructure** across highways, railways, and ports, promoting **multimodal connectivity and reducing emissions.**
- **Dedicated Freight Corridors (DFCs)** and **Multimodal Logistics Parks (MMLPs)** enhance rail and road connectivity, **optimizing transport efficiency and reducing carbon footprints.**
- **FAME Scheme**
- **Unified Logistics Interface Platform (ULIP)**
- **LEADS (Logistics Ease Across Different States):** Ranks states based on the efficiency of their logistics ecosystem.
- **PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) Scheme**

What Measures Can be Taken to Reduce Emissions in India's Logistics Sector?

- **Structural Shift from Road to Rail:** India should **increase the use of railways for freight transport,** using its **electrified rail network to cut emissions**.
    - Countries like the **US and China** have invested heavily in expanding their rail networks, which helps reduce freight transport emissions.
        - **Electrified rail is a nearly zero-carbon option,** making it a sustainable choice for long-distance freight.
- **Promoting EVs and Alternate Fuels:** India should **promote EV adoption in logistics through subsidies, charging infrastructure, and battery support**, while also **encouraging alternate fuels** like CNG and biofuels. A strong policy framework and public-private investment are key to this transition.
- **Boost Coastal Shipping and Inland Waterways:** India should **enhance coastal shipping and inland waterways** for freight transport, as these modes offer **low carbon emissions**.
    - Adopting **cleaner technologies** like **LNG-powered vessels, solar-assisted boats, and biofuel-run barges** will improve sustainability.
    - Aligning with the **International Maritime Organization's (IMO)** target to **cut global shipping emissions by 50% by 2050**, these initiatives will support India's decarbonisation efforts.
- **Towards Sustainable Aviation**: Though air freight is a **challenging sector to decarbonise** due to its reliance on refined fuels, India can focus on **enhancing aviation efficiency** by **investing in sustainable aviation fuels (SAFs)** and **promoting greener aircraft technologies.**
    - Additionally, **integrating low-carbon solutions in other transport sectors** can help **offset emissions from air freight.**
- **Promoting Warehousing:** India should promote **green warehouses** using **renewable energy, energy-efficient materials**, and **smart automation systems** to reduce emissions and enhance sustainability in the logistics sector.
- **Regulating Emissions:** India should introduce strict emission standards for the logistics sector, **promote carbon credit or trading systems,** and ensure compliance through regular audits and transparent reporting to drive sustainable practices.

India’s Logistical Sector

Click Here to Read More: **Key Issues in India's Logistical Sector**, **Enhancing the Efficiency of the Logistical Sector**

Conclusion

To achieve net-zero emissions by 2070, India must focus on making its logistics sector more sustainable. This can be done by boosting **rail freight**, making **road transport electric**, using **clean fuels for ships**, and improving **energy efficiency in warehouses**. With the right policies, technology, and private sector involvement, India can build a greener, more efficient logistics system for the future.

Drishti Mains Question:

Discuss the challenges and opportunities in decarbonizing India's logistics sector. Highlight the key government initiatives.

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. The Gati-Shakti Yojana needs meticulous coordination between the government and the private sector to achieve the goal of connectivity. Discuss. (2022)