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INDIA'S TRANSPORT SECTOR

SYLLABUS:

GS 3 > Industry and infrastructure

IN NEWS:

- Over the last decade, India's **transport sector has seen a mission-mode**, multi-sector push to expand connectivity across roads, rail, airports, ports and waterways, reduce logistics costs, improve passenger safety, and **support Viksit Bharat@2047**. This transformation has been driven by institutional reforms, integrated planning, and high public capital expenditure, under programmes such as **PM GatiShakti, the National Logistics Policy, Bharatmala, Sagarmala and UDAN**.
- **Recent disruptions**, however, exposed structural gaps. **Overcrowded Bihar-bound trains during Chhath Puja** highlighted capacity constraints in low-priced public transport, while **mass IndiGo flight cancellations** in December led to fare spikes, revealing vulnerabilities in a concentrated private aviation market.
- Together, these episodes show that infrastructure expansion must be complemented by adequate public investment, regulatory capacity and competitive markets to safeguard welfare.

INDIA'S TRANSPORT SECTOR:

- India's transport sector forms the backbone of the economy, integrating roads, railways, ports, waterways and aviation **to enable mobility, trade and regional development**.
- Contributing about **14–14.5% of GDP** and employing **over 22 million people**, the sector underpins both domestic supply chains and international commerce (**Source: Indian Chamber of Commerce (ICC) & Aviral Logistics Reports**).
- With India targeting a **US\$ 6 trillion economy by 2030** and **US\$ 1 trillion merchandise exports**, demand for efficient transport and logistics is rising rapidly (**Source: Government of India export and economic projections**).
- Freight movement in India is currently dominated by **roads (66%)**, followed by **rail (31%)**, **shipping (3%)**, and **air (1%)**, highlighting the need for modal diversification and multimodal integration (**Source: ICC–Aviral Logistics Landscape Analysis**).
- Major investments in highways, Dedicated Freight Corridors, ports, inland waterways, regional aviation and warehousing are aimed at correcting these imbalances (**Source: Ministry of Road Transport & Highways; Ministry of Railways; Ministry of Ports, Shipping and Waterways; Ministry of Civil Aviation**).

SIGNIFICANCE OF THE TRANSPORT SECTOR FOR INDIA:

- **Economic growth and employment generation:**
 - The transport and logistics sector contributes **about 14–14.5% of India's GDP** and provides employment to **over 22 million people**, making it one of the largest economic and employment generators in the country (Source: ICC–Aviral Reports).
 - As India targets a **US\$ 6 trillion economy and US\$ 1 trillion merchandise exports by 2030**, efficient transport systems become critical for sustaining high growth (Source: Government of India economic and export projections). Studies indicate that a **10% reduction in logistics costs can raise exports by 5–8%**, underlining the strong growth multiplier effect of transport efficiency (Source: ICC–Aviral Estimates).
- **Trade facilitation and logistics efficiency:**
 - Transport infrastructure directly affects India's trade competitiveness. India's improvement in the **World Bank's Logistics Performance Index to rank 38** reflects better port connectivity, digitisation and multimodal planning (Source: World Bank LPI 2023).
 - Policy initiatives such as the **National Logistics Policy** aim to reduce logistics costs from **13–14% of GDP to 8–10%**, aligning India with global benchmarks (Source: National Logistics Policy, 2022).
- **Regional development and growth poles:**
 - Transport infrastructure acts as a catalyst for **regional development and growth poles**.
 - For instance, the **Kempegowda International Airport (Bengaluru)** has transformed North Bengaluru into a major economic hub, attracting IT parks, logistics centres, warehousing, hospitality and real estate, and generating large-scale employment beyond the city core (Source: Ministry of Civil Aviation; State Infrastructure Development Reports).
 - Similarly, regional airports developed under the **UDAN scheme** have integrated smaller cities into national markets, stimulating tourism, trade and local employment (Source: Ministry of Civil Aviation, UDAN Progress Reports).
- **Port-led and coastal development:**
 - Ports are central to India's external trade, handling **around 95% of trade by volume and about 65% by value** (Source: Ministry of Ports, Shipping and Waterways).
 - The **Sagarmala Programme** promotes port-led industrialisation, coastal economic zones and improved hinterland connectivity. For example, the development of **deepwater ports such as Vizhinjam** enhances India's transshipment capacity and reduces dependence on foreign ports, lowering logistics costs and strengthening maritime trade competitiveness (Source: MoPSW; Sagarmala Programme Documents).
- **Role of inland waterways and sustainable transport:**
 - Inland water transport provides a **cost-effective and environmentally sustainable** alternative for bulk cargo.
 - Cargo movement on national waterways has increased sharply in recent years, demonstrating their potential for transporting coal, cement, foodgrains and construction material at lower fuel and emission costs compared to road transport (Source: Ministry of Ports, Shipping and Waterways). This supports both logistics efficiency and India's climate commitments (Source: Jal Marg Vikas Project Reports).
- **Modal diversification and system resilience:**

- India's freight movement is currently dominated by **roads (66%)**, followed by **rail (31%)**, **shipping (3%)**, and **air (1%)**, highlighting the need for modal diversification (Source: ICC–Aviral Logistics Landscape Analysis).
- Investments in **Dedicated Freight Corridors**, coastal shipping and inland waterways aim to rebalance this modal mix, reduce congestion and improve system resilience (Source: Ministry of Railways; DFC Programme Documents).
- **Inclusive development and rural integration:**
 - Transport connectivity plays a vital role in **inclusive growth** by linking rural and remote regions with urban centres and export markets. Rural roads, multimodal logistics parks and improved rail–road connectivity enable farmers, MSMEs and tribal regions to access markets, services and employment opportunities (Source: PM GatiShakti National Master Plan; National Logistics Policy).

CHALLENGES FACING INDIA'S TRANSPORT SECTOR:

Infrastructure Bottlenecks and Capacity Constraints:

- **Rail Overcrowding:** For instance, in late 2025, **trains to Bihar were severely overcrowded** during peak travel seasons like Chhath Puja and elections, exposing limited capacity despite fixed low fares. This reflects fundamental infrastructure shortages in rail availability and service frequency.
- **Road Congestion and Bottlenecks:** India's heavy reliance on road freight — with over **60% of freight movement by road** — contributes to traffic congestion, slower truck speeds and higher fuel use. The imbalance between modes strains highways in urban and intercity corridors.
- **Urban Transport Limits:** Mega-cities like Mumbai and Delhi face severe urban congestion and frequent service disruptions in local transport systems, limiting mobility and productivity.

Supply Shocks and Operational Failures in Aviation:

- **IndiGo Flight Cancellations:** In December 2025, **IndiGo cancelled over 2,000 flights**, disrupting travel for tens of thousands of passengers and leading to ticket price spikes and refunds worth hundreds of crores. The crisis stemmed from poor crew planning under new duty rules in a **market dominated by IndiGo (over ~60% share)**.
 - The aviation regulator ordered a **5% cut in IndiGo's flight schedules** to improve reliability.
 - Such a concentrated market shows how lack of competition can amplify shocks.

Modal Imbalance and Logistics Inefficiency:

- **Heavy Dependence on Roads:** The freight sector's reliance on roads increases costs, emissions and delays, while under-utilisation of **rail and waterways** reduces efficiency.
- **First-Mile and Last-Mile Gaps:** Poor connectivity between factories, logistics hubs and ports leads to higher transport costs and delays in export logistics, especially compared with countries with integrated multimodal systems.

Regulatory and Market Fragmentation:

- **Fragmentation in Logistics Services:** India's logistics sector includes numerous small players with fragmented operations, creating inefficiencies in warehousing, transport coordination and standardisation.
- **Customs and Compliance Delays:** Multiple layers of inspection and compliance at ports and borders increase turnaround times, raising export costs.

Safety, Climate and Sustainability Challenges:

- **Safety Risks:** Transport in India continues to face high accident rates on roads and safety concerns across modes, highlighting the need for robust design and enforcement.
- **Environmental Pressures:** Transport remains a major source of emissions, and climate events (e.g., heavy rains disrupting rail services) increasingly threaten infrastructure reliability.

Project Delays and Implementation Barriers:

- **Delayed Connectivity Projects:** Even high-priority projects like the **Delhi–Meerut RRTS** face repeated schedule delays, affecting expected benefits in reduced travel time and urban mobility.
- **Land Acquisition and Funding Issues:** Projects like expressways (e.g., **Bengaluru–Chennai Expressway**) have suffered from delays due to land and financial bottlenecks, slowing integration of economic corridors.

GOVERNMENT INITIATIVES TO STRENGTHEN INDIA'S TRANSPORT SECTOR:

Integrated Planning and Logistics Reforms:

- **PM GatiShakti – National Master Plan:**
 - A GIS-based, multimodal planning platform integrating roads, railways, ports, airports, waterways and logistics infrastructure to avoid siloed development and reduce project delays
 - Ensures last-mile connectivity to economic clusters such as industrial corridors, ports, mining zones and agri-hubs.
- **National Logistics Policy (2022):**
 - Aims to reduce logistics costs from **13–14% of GDP to 8–10%**, improve India's LPI ranking, and promote data-driven logistics governance through platforms like **ULIP** (Source: Ministry of Commerce & Industry).

Mode-Specific Infrastructure Programmes:

- **Roads and Highways:**
 - **Bharatmala Pariyojana** focuses on economic corridors, border roads, coastal roads and expressways to improve freight efficiency and regional connectivity.
- **Railways:**
 - **Dedicated Freight Corridors (DFC)** to segregate freight and passenger traffic, improve average freight speed, and lower logistics costs
 - **Rail electrification and Kavach safety system** to improve efficiency and reduce accidents.
- **Ports and Waterways:**
 - **Sagarmala Programme** for port-led industrialisation, coastal shipping, logistics parks and hinterland connectivity .
 - **Jal Marg Vikas Project** on National Waterways to promote low-cost, low-carbon bulk transport.
- **Aviation:**
 - **UDAN (Ude Desh ka Aam Nagrik)** scheme to enhance regional air connectivity and integrate tier-2 and tier-3 cities into national markets.
 - **Digi Yatra & e-GCA** for seamless, paperless passenger and regulatory processes.

Sustainability and Digital Push:

- **Green transport initiatives:** promotion of inland waterways, rail electrification, electric mobility at ports, and green hydrogen hubs (Source: MoPSW; Ministry of Railways).
- **Digital platforms:** ULIP, FASTag, port community systems to improve transparency and reduce transaction time.

WAY FORWARD:

- **Address Capacity and Demand Mismatch:**
 - Public transport pricing must be complemented with **capacity augmentation**, especially in railways during seasonal migration peaks (for instance, festival-linked special trains for migrant corridors).
 - Increase rolling stock, train frequency, and station infrastructure in high-demand regions
- **Promote Modal Shift and Multimodal Integration:**
 - Encourage **shift from road to rail and waterways** for bulk freight through pricing incentives, dedicated terminals and last-mile rail connectivity.
 - Expand multimodal logistics parks near ports, industrial corridors and agri-clusters
- **Strengthen Competition and Regulation:**
 - Prevent excessive market concentration in aviation and logistics to avoid monopoly-driven price shocks, as seen in the **IndiGo flight cancellation episode**.
 - Enhance regulatory oversight without stifling competition
- **Improve First- and Last-Mile Connectivity:**
 - Invest in rural roads, feeder rail links and port hinterland connectivity to reduce logistics friction for MSMEs, farmers and exporters
- **Enhance Climate Resilience and Safety:**
 - Design transport infrastructure resilient to climate extremes (floods, heatwaves, landslides).
 - Strengthen road safety enforcement, urban public transport systems, and rail safety technologies
- **Institutional and Governance Reforms:**
 - Streamline land acquisition, environmental clearances and inter-agency coordination using digital monitoring platforms like PRAGATI and GatiShakti.
 - Promote PPPs while safeguarding public interest through transparent contracts and accountability mechanisms.

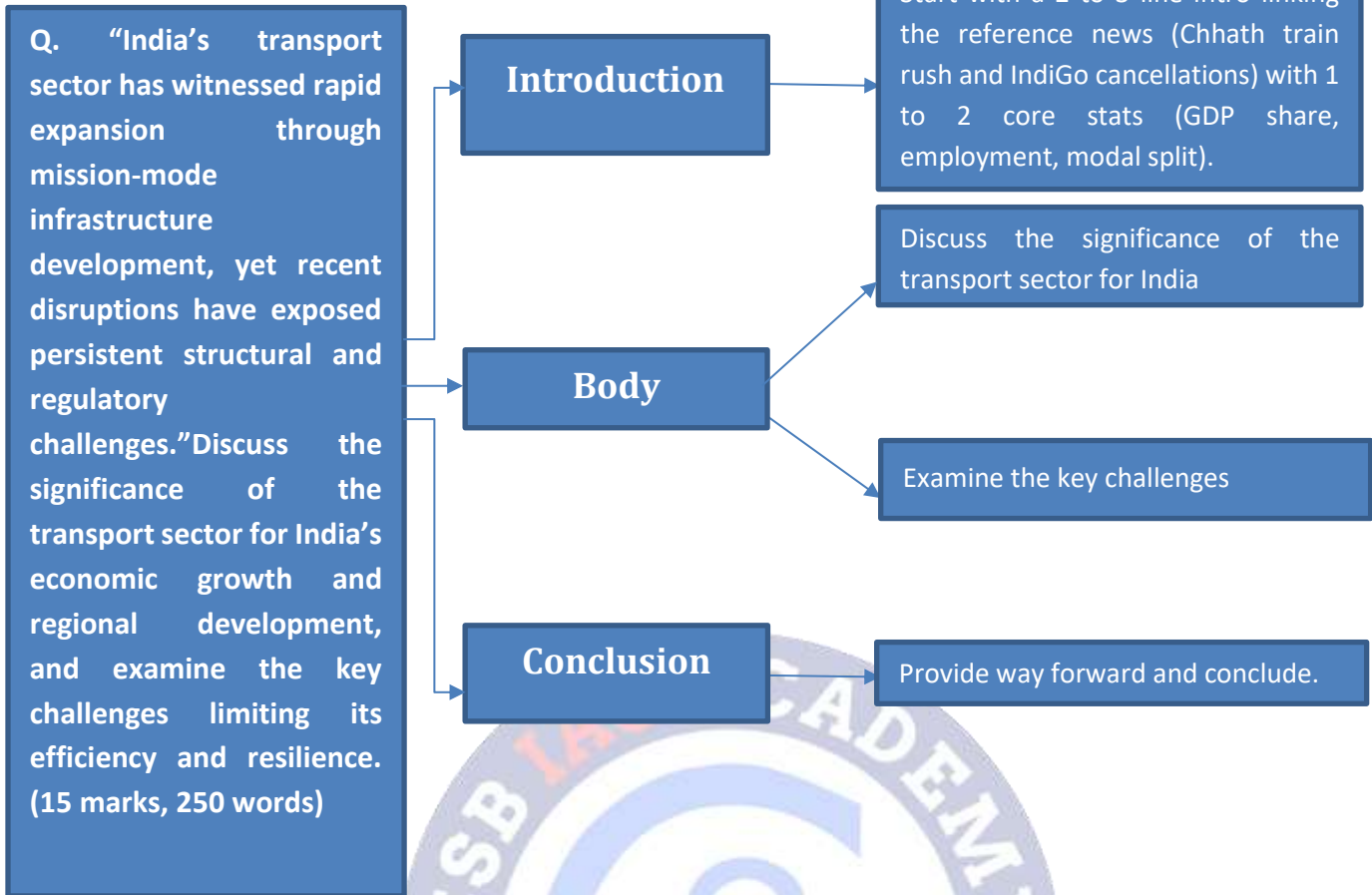
CONCLUSION:

- India's transport sector stands at a critical juncture. While **mission-mode infrastructure expansion** over the last decade has significantly improved connectivity and logistics capacity, recent disruptions in railways and aviation reveal **structural weaknesses related to capacity, regulation and market design**.
- Going forward, India's transport transformation must move beyond asset creation to focus on **system efficiency, resilience, competition and sustainability**. Integrated planning under **PM GatiShakti**, cost rationalisation through the **National Logistics Policy**, and a balanced public-private framework will be crucial to ensuring that transport infrastructure truly supports **inclusive growth, export competitiveness and the vision of Viksit Bharat@2047**.

PRACTICE QUESTION:

Q. "India's transport sector has witnessed rapid expansion through mission-mode infrastructure development, yet recent disruptions have exposed persistent structural and regulatory challenges." Discuss the significance of the transport sector for India's economic growth and regional development, and examine the key challenges limiting its efficiency and resilience. (15 marks, 250 words)

APPROACH:



MODEL ANSWER:

India’s transport sector has undergone a **mission-mode expansion over the last decade** to improve connectivity across **roads, railways, ports, waterways and aviation**, reduce logistics costs and support **Viksit Bharat@2047**. The sector contributes **about 14–14.5% of GDP** and employs **over 22 million people**, highlighting its importance for economic growth. Recent disruptions, such as **overcrowded Bihar-bound trains during Chhath Puja** and **mass IndiGo flight cancellations leading to fare spikes**, have exposed persistent **capacity, regulatory and market-structure challenges**.

Significance of the Transport Sector for India:

- 1. Driver of Economic Growth and Employment:** The transport and logistics sector contributes **14–14.5% of GDP** and provides livelihoods to **over 22 million people**, making it a major engine of growth and employment.
- 2. Enabler of Trade and Export Competitiveness:** Efficient transport systems are critical for India’s target of a **US\$ 6 trillion economy and US\$ 1 trillion exports by 2030**. Studies indicate that a **10% reduction in logistics costs can increase exports by 5–8%**.
- 3. Reduction in Logistics Costs and Supply Chain Efficiency:** Improved connectivity and digitisation have helped India reach **38th rank in the World Bank’s Logistics Performance Index**, reflecting better port connectivity and multimodal planning.
- 4. Regional Development and Growth Poles:** Transport infrastructure acts as a catalyst for spatial development. For instance, **Kempegowda International Airport, Bengaluru**, has transformed North

Bengaluru into a hub for IT, logistics, warehousing and real estate, generating large-scale employment.

5. **Port-led and Coastal Development:** Ports handle **around 95% of India's trade by volume**. Programmes like **Sagarmala** promote port-linked industrialisation. For example, the **Vizhinjam deepwater port** strengthens India's transshipment capacity and lowers logistics costs.
6. **Sustainable Transport through Inland Waterways:** Inland waterways offer a **cost-effective and low-carbon alternative** for bulk cargo. Rising cargo movement on national waterways reduces pressure on roads and railways.
7. **Inclusive Growth and Rural Integration:** Rural roads, rail-road integration and multimodal logistics parks connect farmers, MSMEs and tribal regions to markets, improving income opportunities and access to services.

Challenges Limiting Efficiency and Resilience:

1. **Capacity Constraints and Infrastructure Bottlenecks:** For instance, overcrowded trains to Bihar during Chhath Puja exposed inadequate rail capacity and service frequency despite low fares.
2. **Road Congestion and Modal Imbalance:** With **66% of freight moving by road**, highways face congestion, higher fuel consumption and delays, while railways and waterways remain under-utilised.
3. **Supply Shocks in Aviation:** For instance, **IndiGo cancelled over 2,000 flights in December 2025**, disrupting passengers and causing fare spikes. This highlighted risks in a market with high concentration.
4. **Regulatory and Market Fragmentation:** The logistics sector remains fragmented with numerous small operators, leading to coordination problems and lack of standardisation.
5. **First and Last Mile Connectivity Gaps:** Weak links between factories, logistics hubs, ports and hinterland areas raise transport costs and delay exports.
6. **Safety and Climate Vulnerability:** High road accident rates and climate-induced disruptions such as floods and extreme rainfall affect reliability and increase economic losses.
7. **Project Delays and Land Acquisition Issues:** Delays in projects like the **Delhi–Meerut RRTS** and **Bengaluru–Chennai Expressway** slow the integration of economic corridors.

Way Forward

- **Augment capacity along with affordable pricing**, especially in railways, through additional rolling stock, higher frequency and seasonal special trains.
- **Promote modal shift** from road to railways and waterways using pricing incentives, dedicated terminals and last-mile rail connectivity.
- **Strengthen competition and regulation** in aviation and logistics to prevent monopoly-driven price shocks.
- **Improve first and last mile connectivity** through rural roads, feeder rail links and port hinterland projects.

- **Build climate-resilient and safer infrastructure** by integrating disaster-resilient design and safety technologies.
- **Streamline governance and clearances** using digital platforms to reduce delays and cost overruns.

India's transport sector is at a critical inflection point. While **mission-mode infrastructure expansion** has improved connectivity and logistics capacity, recent disruptions show that **asset creation alone is insufficient**. The focus must now shift to **system efficiency, resilience, competition and sustainability**. Integrated planning under **PM GatiShakti**, cost rationalisation through the **National Logistics Policy**, and balanced public-private participation under initiatives like **Bharatmala, Sagarmala and UDAN** will be essential to ensure that transport infrastructure supports **inclusive growth, export competitiveness and the vision of Viksit Bharat@2047**.

