



## Revamping Indian Railways

*This editorial is based on “[The bigger tragedy is the Railways and its systemic inertia](#)” which was published in The Hindu on 27/02/2025. The article brings into the picture Indian Railways' systemic failures, where negligence—not resource constraints—causes recurring tragedies.*

**For Prelims:** [Indian Railways](#), [Dedicated Freight Corridors](#), [PPP models](#), [Amrit Bharat Station scheme](#), [Vande Bharata Express expansion](#), [Arunachal Frontier Highway](#), [Bio-toilets](#), [Arunachal Frontier Highway](#), [Bharat Gaurav Trains](#), [Cross-subsidization](#), [Kavach](#).

**For Mains:** Contribution of Indian Railway to the Indian Economy, Key Issues Associated with Indian Railways

The recent New Delhi railway station stampede exposes systemic failures in [Indian Railways](#) that stem from indifference rather than resource constraints. Despite recurring tragedies at stations like **Elphinstone Road (2017)** and **Allahabad (2013)**, the organization has failed to implement basic crowd control measures and safety protocols. India urgently needs to address this **systemic inertia to prevent future tragedies from being dismissed** as unfortunate inevitabilities rather than preventable failures.

### How the Indian Railway Contributes to the Indian Economy?

- **Backbone of National Transportation:** Indian Railways is the **lifeline of the country, providing affordable and reliable transport** to millions daily.
  - It facilitates the movement of both passengers and goods across vast distances, playing a crucial role in economic integration.
  - Indian Railways transports over **8 billion passengers annually**, making it one of the busiest railway networks globally.
    - During the [Covid-19 pandemic](#), Indian Railways operated "**Oxygen Express**" trains to deliver medical oxygen across states, showcasing its **logistical strength**.
- **Economic Growth and Industrial Development:** Railways serve as a crucial driver of economic growth by facilitating **trade, commerce, and industrialization across the country**.
  - The transportation of raw materials like **coal, iron ore, cement, and agricultural produce** ensures the smooth functioning of industries.
    - Efficient rail logistics reduce supply chain costs, enhancing the competitiveness of Indian manufacturing and exports.
    - Mega infrastructure projects such as the [Dedicated Freight Corridors \(DFCs\)](#) aim to boost efficiency and economic productivity.
  - [CAG \(2021-22\)](#) highlighted that coal alone accounts for **nearly 50% of railway freight earnings**, making industrial supply chains highly dependent on rail connectivity.

- **Employment Generation and Livelihood Support:** Indian Railways is one of the **largest employers in the world**, directly employing millions and indirectly supporting many more in ancillary industries.
  - It employs over 1.2 million people, **making it the world's ninth-largest employer.**
    - It provides **stable employment across various skill levels**, from engineers and technicians to station managers and track maintenance workers.
  - The expansion of railway infrastructure, station redevelopment, and manufacturing of new rolling stock create additional employment opportunities.
    - **Privatization and PPP models** in railways are expected to generate further job prospects in operations and logistics
- **Rural Connectivity and Regional Development:** Railways play a pivotal role in connecting remote and rural areas, integrating them with urban centers and markets.
  - **Improved railway infrastructure in underdeveloped regions** enhances accessibility to education, healthcare, and employment opportunities.
    - Special railway corridors such as the North-East Connectivity Project aim to boost regional development and national integration.
  - In FY 2023-24, the railways have decided to redevelop 1,275 railway stations under the **Amrit Bharat Station scheme**
  - The **Vande Bharata Express expansion to Tier-2 and Tier-3 cities** is a step toward improving accessibility and regional economic development.
- **Catalyst for Sustainable Development and Green Mobility:** Railways offer an **environmentally sustainable alternative to road and air transport by reducing carbon emissions** and fuel consumption.
  - The transition to **full electrification and renewable energy integration** aims to make **Indian Railways carbon-neutral by 2030.**
    - **14 States/UTs** have been 100% electrified by Indian Railways as of July 2023.
  - Energy-efficient locomotives, electrified routes, and green initiatives such as **bio-toilets** are improving the railway sector's sustainability footprint.
    - **Rail freight emits nearly 80% less greenhouse gas** per ton-kilometer than road transport, making it a key player in India's sustainable mobility strategy.
- **Strengthening National Security and Strategic Mobility:** Railways play a crucial role in national security by **ensuring rapid troop movement and defense logistics in border areas.**
  - Dedicated railway lines and freight corridors aid in the **quick mobilization of military supplies, vehicles, and personnel during emergencies.**
    - The construction of **strategic railway lines in border regions, particularly in the Northeast and Ladakh**, enhances defense preparedness.
  - The **Arunachal Frontier Highway** is a landmark infrastructure project, connecting **12 districts along the LAC with China.**
- **Urban Mobility and Decongestion of Road Networks:** The expansion of **metro rail and suburban rail systems in major cities** is reducing congestion and improving urban mobility.
  - Efficient mass transit options help reduce **travel time, pollution, and road accidents in densely populated areas.**
    - The integration of **metro, suburban, and regional rapid transit systems** is fostering seamless multimodal transport networks.
  - India achieved over 1,000 km of operational metro rail network, becoming the **world's third-largest metro system after China and the US.**
    - The **Rapid Transit System between Delhi and Meerut, set to open in 2025**, will significantly cut travel time between the two cities.
- **Boost to Tourism and Cultural Integration:** Railways enable affordable and convenient travel to India's diverse cultural, historical, and religious sites, promoting tourism.
  - Special trains such as **Bharat Gaurav Trains** and **luxury services like the Palace on Wheels** attract both domestic and international tourists.
    - Enhanced railway connectivity to **pilgrimage sites, heritage locations, and ecotourism** destinations boosts local economies.

## What are the Key Issues Associated with Indian Railways?

- **Deteriorating Financial Health:** Indian Railways is facing severe financial stress due to a

declining revenue surplus, increasing **reliance on [extra-budgetary resources \(EBR\)](#)**, and **unsustainable operating costs**.

- The growing gap between **expenditure and revenue** has led to **reduced internal resource generation**, affecting long-term sustainability.
  - Additionally, **heavy [cross-subsidization](#) of passenger fares through freight earnings** has distorted pricing mechanisms, making freight transportation less competitive.
- **CAG (2021-22) reported the worst-ever Operating Ratio of 107.39%**, meaning **Railways spent ₹107.39 to earn ₹100**, which would have been **109.36%** if pension and asset renewal expenses were included.
- **Infrastructural Deficiencies:** Frequent **[derailments](#), stampedes, and collisions** point to **gaps** in infrastructure maintenance and safety oversight.
  - **Poor track renewal, outdated signaling systems, and overcrowded stations** increase the likelihood of accidents.
  - The huge backlog in asset replacement further exacerbates safety concerns, raising risks for millions of daily passengers.
  - **CAG (2021-22) flagged a ₹34,318.79 crore backlog in over-aged asset renewal.**
    - The **[Odisha Balasore triple train accident \(June 2023\)](#)** highlighted critical gaps in railway safety and signaling systems.
    - The **'Kavach' anti-collision system**, designed to prevent crashes, has seen slow implementation, with coverage limited to select routes
- **Poor Crowd Management and Station Infrastructure:** Overcrowding at major railway stations, **lack of adequate holding areas, and ineffective crowd control measures** pose serious risks, especially during festivals or special events.
  - The **absence of proper barricading, unidirectional movement planning**, and emergency response mechanisms increases the likelihood of stampedes.
  - The **February 2025 New Delhi railway station stampede**, triggered by a last-minute train announcement, resulted in multiple casualties.
- **Freight Revenue Stagnation and Market Competition:** Freight operations, which subsidize passenger losses, **face increasing competition from road and air transport due to inefficiencies and high tariffs**.
  - Rail freight remains slow, lacks last-mile connectivity, and is heavily dependent on bulk commodities like **coal, limiting revenue diversification**.
    - The shift towards **renewable energy could reduce coal transportation** demand, impacting freight earnings further.
  - Govt records show that the rail share in freight transport has declined steadily from **85% in 1951, to 60% in 1991, and in 2022 it was only 27%**.
- **Environmental and Sustainability Challenges:** Despite electrification efforts, Indian Railways continues to rely on diesel locomotives in several regions, contributing to air pollution and carbon emissions.
  - The **push for 100% electrification is slow**, with delays in infrastructure development and power procurement.
    - **Waste management at stations and inside trains remains inadequate**, affecting cleanliness and sustainability goals.
  - India's transport sector contributes to **12%** of the country's greenhouse gas emissions with the railways accounting for about **4%**.
- **Lagging High-Speed Rail and Bullet Train Projects:** The ambitious **Mumbai-Ahmedabad bullet train project** has faced land acquisition hurdles, funding delays, and political opposition, setting back **India's high-speed rail plans**.
  - Slow execution of **semi-high-speed corridors (like Vande Bharat)** and **inadequate track upgrades** further limit speed improvements across conventional routes.
  - The bullet train project connecting Mumbai to Ahmedabad will be ready by 2022, a decade later it is only 30% complete, and the **revised deadline is now 2028**.
- **Mismanagement of Railway PSUs and Financial Viability Issues:** Several Railway PSUs face declining **profitability, mismanagement, and inefficiencies**, affecting their ability to contribute to Indian Railways' growth.
  - While **some PSUs in financing and tourism have performed well**, others in construction and logistics have seen declining returns.
    - The **falling return on equity and rising dependence on loans** highlight deeper

structural issues.

- CAG (2021-22) reported that return on equity for railway PSUs declined from 9.17% in 2017-18 to **7.53% in 2019-20**.

## What Measures can be Adopted to Revitalise Indian Railways?

- **Financial Sustainability and Revenue Optimization:** Indian Railways **must shift towards a sustainable financial model** by reducing dependency on extra-budgetary borrowings.
  - **Dynamic fare pricing, monetization of railway land assets,** and increased private sector participation (as per **Bibek Debroy Committee**) in station development can enhance revenue streams.
  - **Freight tariff rationalization** and **last-mile connectivity solutions** will make rail cargo more competitive.
    - **Strengthening [Public-Private Partnerships \(PPPs\)](#) in infrastructure** projects can reduce fiscal burdens.
- **Safety Enhancement and Infrastructure Modernization:** Railways must prioritize **track renewal, bridge strengthening, and station decongestion** to minimize accidents and improve operational efficiency.
  - The **widespread implementation of automatic train control systems** like **Kavach** and centralized traffic control can significantly reduce human errors.
  - Upgrading **signaling infrastructure with AI-based predictive maintenance** will enhance real-time monitoring.
  - Comprehensive crowd management strategies, including better station design, holding areas, and **automated entry-exit points**, must be implemented.
- **Technological Advancements and Digitalization:** Implementing **AI-driven predictive maintenance, IoT-based asset monitoring,** and blockchain-enabled freight tracking can boost efficiency and reliability.
  - Expanding the **reach of real-time passenger information systems, smart ticketing solutions,** and integrated mobility apps will improve customer experience.
  - Upgrading railway workshops with automation and robotics will optimize rolling stock maintenance.
    - The **full integration of financial and operational data** under a unified digital platform will streamline railway administration.
- **Freight Sector Reforms and Multimodal Logistics Integration:** Indian Railways must diversify its freight basket beyond coal by **tapping into containerized cargo, automobile logistics, and express freight services.**
  - **[Dedicated Freight Corridors \(DFCs\)](#)** must be expanded with seamless connectivity to ports, highways, and inland waterways.
  - **Rationalizing freight tariffs and reducing terminal handling times** will make rail transport cost-effective for industries.
  - A **National Logistics Grid under PM Gati Shakti** integrating rail, road, and ports must be fast tracked to facilitate end-to-end cargo movement.
- **High-Speed Rail and Semi-High-Speed Expansion:** The **Mumbai-Ahmedabad bullet train project** must be expedited while planning additional high-speed corridors along high-demand routes, building upon **[Rakesh Mohan Committee \(2010\)](#)**.
  - **Track upgradation projects**, including dedicated high-speed freight lines, should be prioritized.
  - Indigenous manufacturing of high-speed rolling stock will reduce procurement costs and **boost [Make in India](#) efforts.**
  - **Land acquisition, financing models, and technology transfer agreements** should be streamlined for faster implementation of high-speed rail projects.
- **Railway Station Modernization and Urban Mobility Integration:** Stations must be transformed into **multimodal transit hubs with seamless connectivity to metro networks, bus terminals, and airports.**
  - Infrastructure upgrades such as **elevated concourses, automated ticketing, and congestion-free passenger movement areas** are essential.
  - Expansion of suburban and regional rail networks will decongest metros and provide faster commuting options.



- The **Indian Railway Station Development Corporation (IRSDC)** must be strengthened to accelerate station redevelopment projects.
- **Sustainable and Green Railways Initiative:** Achieving **100% electrification with renewable energy integration** will reduce dependency on fossil fuels and lower carbon emissions.
  - Expanding **solar and wind power installations** across railway stations, workshops, and vacant land areas will enhance energy sustainability.
  - **Hydrogen-powered and battery-operated locomotives** should be piloted as alternatives to diesel engines.
  - Strengthening **carbon credit mechanisms and green financing** will support long-term sustainability goals..
- **Increased Private Sector Participation:** Following the recommendations of the **Bibek Debroy Committee**, Indian Railways should open more avenues for private sector participation.
  - Private investments in rolling stock procurement, railway catering, and logistics parks will enhance service quality and efficiency.
  - **Competitive bidding for high-demand routes** can improve financial viability while reducing operational burdens on the government.

## Conclusion:

**Indian Railways** remains the backbone of India's transportation and economic infrastructure, but **systemic inefficiencies, financial strain, and safety lapses continue to hinder its full potential**. Addressing infrastructure deficits, enhancing crowd management, and prioritizing financial sustainability are crucial for long-term resilience. Leveraging technology, strengthening freight operations, and promoting green mobility can transform railways into a modern and efficient entity

### **Drishhti Mains Question:**

The financial health of Indian Railways has been a persistent concern, with declining revenue surplus and heavy cross-subsidization of passenger fares. Suggest a roadmap for making Indian Railways financially sustainable.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. With reference to bio-toilets used by the Indian Railways, consider the following statements: (2015)**

1. The decomposition of human waste in the bio toilets is initiated by a fungal inoculum.
2. Ammonia and water vapour are the only end products in this decomposition which are released into the atmosphere.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (d)**

