Reimagining India's Railway System

This editorial is based on "[West Bengal train accident highlights need for a thorough review of misplaced priorities of past two decades in Indian Railways](#)" which was published in The Hindu on 19/06/2024. The article brings into picture the recent rail accident near Siliguri in West Bengal on June 16, where a freight train collided with a passenger train highlighting ongoing safety concerns in the Indian Railways.

For Prelims: **Indian Railways,** National Rail Plan (NRP) for India - 2030, FDI in Railway Sector, **Comptroller and Auditor General,** **Balasore Train collision**, **Mission Raftar**, **Vande Bharat trains** , **Kavach System**, **Bharat Gaurav**, **Railway Protection Force**.

For Mains: Major Issues Related to Indian Railways, Measures to Improve the Railway Sector in India.What recommendations have various committees made to enhance railway safety?

The tragic train accident near Siliguri in West Bengal where a goods train **collided with the Sealdah Kanchanjunga Express** has once again brought the **Indian Railways' (IR) safety issues into sharp focus**. This incident is just the latest in a series of deadly train accidents that have plagued IR over the past decades, with **seven major accidents since 1995** resulting in over 1,600 fatalities.

Despite being a critical mode of transport for a densely populated country like India, Indian Railway has been marred by **frequent policy changes, unrealized plans for network expansion, and a concerning trend of asset failures** leading to accidents.

Addressing this crisis requires a thorough review of **Indian Railways'** priorities, a renewed focus on modernizing its aging infrastructure, and a strategic roadmap to regain its **position as a reliable, efficient, and safe mode of transportation** for both passengers and freight.

What is the Current Organizational Structure of Indian Railways?

- **About: Indian Railways was established in 1853 and is one of the world's largest railway networks.**
  - The first railway on the Indian sub-continent ran over a stretch of **21 miles from Bombay to Thane.**
  - India is projected to account for **40% of the total global share of rail activity** by 2050.
    - Indian Railways crafted the **National Rail Plan (NRP) for India - 2030** to develop a modern railway system.
- **Revenue:** In 2022-23, Railways Indian railways earned **69% of its internal revenue from freight** and **24% from passenger traffic.**
  - The remaining 7% was earned from other miscellaneous sources such as parcel service, coaching receipts, and sale of platform tickets.

- **Structure:**

  - **Ministry of Railways:**

    - **Responsibilities:**

      - Formulates overall railway policy and sets strategic direction.
      - Oversees budgetary allocations for the Indian Railways.
      - Approves major railway projects and expansion plans.
      - Provides policy guidance to the Railway Board.
    - In **Budget 2024-25,** capital outlay of **Rs. 2.52 lakh crore (USD 30.3 billion)** has been allocated to the **Ministry of Railways**.to make advancements in railways.
      - Government has allowed **100% FDI** in the railway sector.
  - **Railway Board:**
    - **Responsibilities:**
      - Implements policies set by the Ministry of Railways.
      - Oversees day-to-day operations of the Indian Railways.
      - Formulates long-term plans for network development, modernization, and safety improvement.
      - Issues directives and guidelines to zonal railways.
  - **Zonal Railways:**
    - **Number:** 17 (as of June 2024) with a proposed 18th zone (South Coast Railway)
    - **Structure:**
      - Zonal Railways further divided into divisions managed by Divisional Railway Managers (DRMs).
      - Each division further subdivided into smaller units for specific functions (e.g., workshops, traffic management).
    - **Responsibilities:**
      - Each zone is responsible for the efficient and safe operation of its geographical territory.
      - Oversees maintenance of tracks, rolling stock, and railway infrastructure within the zone.
      - Implements safety regulations and procedures.
      - Generates revenue through ticket sales and freight charges.

What are the Major Issues Related to Indian Railways?

- **Accidents and Derailments:** Poor infrastructure maintenance and aging assets have led to **recurring accidents, derailments, and collisions.**
  - The recent **Comptroller and Auditor General (CAG) report** raises serious concerns about a worrying trend of signal failures and rail fractures, major contributors to accidents.
    - The **Balasore Train collision in 2023** serves as a stark reminder.
- **Challenges in Financial Performance: Indian Railways faces significant challenges with its financial performance, particularly the stark contrast between its profitable freight segment and its loss-making passenger segment.**

  - A 2023 report from the **CAG** highlighted a **massive loss of Rs. 68,269 crore in passenger services**, which had to be offset by profits from freight traffic.

- **Cripplingly Slow Journeys:** Average speeds of mail and express trains remain at a dismal **50-51 kmph,** falling short of the promised improvements under "**Mission Raftar.**"
  - This glacial pace renders rail travel unattractive fo**r time-sensitive journeys,** especially **when compared to faster road and air options.**
  - The **introduction of "semi-high-speed" Vande Bharat trains** prioritizes plush interiors over substantial speed improvements, **failing to address the core issue of sluggish travel times.**
- **Slow Integration of Emerging Technologies: The Indian Railways has been relatively**

slow in adopting and leveraging emerging technologies, hindering its ability to enhance efficiency, safety, and customer experience.

- ◦ **Example:** Despite its potential to prevent train collisions, the deployment of the [Kavach System](#) has been slow in India.
    - As of now, it has been installed on **only 1,465 km of tracks and 139 locomotives on the South Central Railway.**
    - Contracts for an additional 3,000 km have been awarded, but deployment remains pending.

- **Challenges in** [Public-Private Partnership](#) **(PPP) Models:** The Indian Railways has **struggled to effectively leverage PPP models** for infrastructure development, operations, and service delivery, hindering the mobilization of private capital and expertise.
    - ◦ The introduction of private train operations through the **Bharat Gaurav** has faced **challenges in attracting sufficient private participation** due to concerns over revenue-sharing models, operational autonomy, and regulatory uncertainties.
    - ◦ Factors such as **complex contractual frameworks, limited risk-sharing mechanisms, and bureaucratic hurdles** have discouraged adequate private sector participation.
- **Ineffective Asset Utilization and Maintenance Strategies: The Indian Railways has faced challenges in optimizing the utilization of its vast asset base, including rolling stock, infrastructure, and land resources, leading to inefficiencies and underutilization.**
    - ◦ **Example:** In April 2023, an **abandoned railway bridge weighing 500 tonne** was stolen from Amiyawar village in Nasriganj in Rohtas district of Bihar.
        - In February 2023, **two kilometers of railway track worth crores of rupees** was stolen by scrap dealers in Madhubani district of Bihar allegedly in connivance with **Railway Protection Force (RPF) personnel.**

What Recommendations have various Committees made to Enhance Railway Safety?

- **Kakodkar Committee (2012):**
    - ◦ Establishing a statutory **Railway Safety Authority.**
    - ◦ Forming a **non-lapsable Rashtriya Rail Sanraksha Kosh (RRSK)** of Rs. 1 lakh crores over 5 years for safety projects.
    - ◦ Adopting advanced technologies for track maintenance and inspection.
    - ◦ Enhancing human resource development and management.
    - ◦ Ensuring independent accident investigations.
- **Bibek Debroy Committee (2014):**
    - ◦ Separating the railway budget from the general budget.
    - ◦ Outsourcing non-core activities.
    - ◦ Establishing a **Railway Infrastructure Authority of India.**
- **Vinod Rai Committee (2015):**
    - ◦ Setting up an independent **Railway Safety Authority** with statutory powers.
    - ◦ Forming a **Railway Accident Investigation Board** for impartial inquiries.
    - ◦ Establishing a separate **Railway Infrastructure Company** for owning and maintaining railway assets.
    - ◦ Implementing a performance-linked incentive scheme for railway employees.
- **Rakesh Mohan Committee (2010)**
    - ◦ Revamp the accounting system to align with Indian GAAP (Generally Accepted Accounting Principles).
    - ◦ Expand railway presence in FMCG, Consumer Durables, IT, containerized cargo, and automobile segments.
    - ◦ Focus on long-distance and inter-city transport, speed upgrades, and High-Speed Rail corridors for passenger services.
    - ◦ Improve connectivity to industry clusters and major ports.

- Develop logistics parks at key network hubs.

What Measures Can Be Taken to Improve the Railway Sector in India?

- **Integrated Multimodal Logistics Solutions: Developing integrated logistics solutions that seamlessly combine rail, road, and air transportation modes for efficient door-to-door movement of goods and passengers.**
  - **Establishing logistics parks and multimodal hubs** near major industrial clusters and urban centers to facilitate intermodal connectivity and reduce last-mile inefficiencies.
- **Renewable Energy Integration: Developing a comprehensive** renewable energy **strategy to transition the Indian Railways towards clean energy sources, such as solar, wind, and biomass.**
  - Undertakin**g large-scale installation of solar panels on station rooftops, vacant land parcels, and along railway tracks** to generate renewable energy for traction and non-traction purposes.
  - Exploring the **deployment of battery-electric and hydrogen fuel cell technologies for rolling stock and auxiliary power units**, reducing the Railways' carbon footprint and environmental impact.
- **Intelligent Transportation Systems (ITS): Implementing advanced ITS solutions, such as real-time traffic management systems, automated train control systems, and intelligent signaling systems through Kavach, to optimize network capacity and improve safety.**
  - India can also learn from **Germany's Deutsche Bahn** renowned for its punctuality and operational efficiency.
- **Value Capture from Land Development:** Leveraging land assets near railway stations for commercial development projects like **malls or office spaces, generating revenue streams beyond ticketing.**
- **Leverage Digital Twins and Predictive Analytics: Developing** digital twins **of the entire railway network, including infrastructure, rolling stock, and operational systems, to create virtual replicas for simulation, testing, and optimization.**
  - Implementing predictive analytics and machine learning algorithms to **analyze real-time data from sensors, cameras, and other sources** to enable proactive maintenance, optimize asset utilization, and enhance safety.
    - India can learn from **the Netherlands Nederlandse Spoorwegen** in this regard.
  - Integrate digital twins and predictive analytics with **decision support systems to enable data-driven decision-making** and proactive risk management.

Drishti Mains Question:

Examine the overall performance and challenges encountered by Indian Railways in recent years, and suggest effective strategies for its enhancement.

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)

PDF Refernece URL: