



**KAMARAJ IAS ACADEMY**  
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# Modernisation of Indian Railways

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India is undertaking a comprehensive transformation of its railway sector to enhance speed, safety, connectivity, and passenger experience. Under initiatives like the PM Gati Shakti National Master Plan, Indian Railways is shifting from a traditional mass transport system to a modern, technology-driven, and integrated transport network. The focus is on infrastructure expansion, high-speed trains, station redevelopment, and advanced safety systems to align with global standards and support India's goal of becoming a developed nation by 2047.

## Infrastructure Expansion & Connectivity:

A major pillar of railway modernisation is large-scale infrastructure development. Under PM Gati Shakti, about 100 railway projects have been sanctioned with an investment of ₹1.53 lakh crore, including over 6000 km of new lines, doubling, and multitracking. This expansion aims to improve connectivity, especially in remote and underserved regions, while also reducing congestion on busy routes. Additionally, railways are being integrated with other modes like highways and waterways to create a multimodal transport network.

## High-Speed & Modern Trains:

The introduction of modern trains like Vande Bharat Express (2019) marks a major leap in speed and passenger comfort. These indigenous semi-high-speed trains can run up to 160 km/h and are equipped with modern amenities and safety systems. The launch of Vande Bharat Sleeper (2026) reflects expansion into long-distance premium travel. Further, India plans to develop High-Speed Rail (HSR) corridors forming a "diamond quadrilateral" of about 4000 km, targeting speeds above 300 km/h to significantly reduce travel time between major cities.

## Station Redevelopment & Passenger Experience:

### Kamaraj IAS Academy

Plot A P.127, AF block, 6 th street, 11th Main Rd, Shanthi Colony, Anna Nagar, Chennai, Tamil Nadu 600040  
Phone: 044 4353 9988 / 98403 94477 / Whatsapp : 09710729833

Under the Amrit Bharat Station Scheme (2022), more than 1300 railway stations are being redeveloped with modern amenities, improved infrastructure, and better accessibility. The scheme also includes initiatives like “One Station One Product” to promote local economies and aims to transform stations into urban hubs and city centres, enhancing passenger experience and supporting regional development.

### **Safety Modernisation (Kavach System):**

Indian Railways is deploying Kavach, an indigenous Automatic Train Protection (ATP) system designed to prevent train collisions by automatic braking and real-time communication. It represents a major advancement in railway safety and is planned for expansion across the network to ensure high safety standards and reduced accident risks.

### **Electrification & Sustainability:**

Indian Railways is moving towards near 100% electrification of broad-gauge routes, reducing dependence on fossil fuels and lowering carbon emissions. This aligns with India’s climate commitments and promotes energy-efficient and sustainable transport systems.

### **Freight Corridors & Logistics Efficiency:**

Dedicated Freight Corridors (Eastern & Western DFCs) are being developed to separate freight and passenger traffic. This helps in:

Increasing freight speed

Reducing congestion

Lowering logistics costs

Boosting industrial growth

These corridors are crucial for improving India’s global competitiveness in logistics.

### **Key Facts:**

PM Gati Shakti National Master Plan Launched in 2021

Amrit Bharat Station Scheme Launched in 2022

High-Speed Rail Vision:

7 corridors forming “diamond quadrilateral”

Aim: Speeds above 300 km/h

Key project: Mumbai–Ahmedabad Bullet Train