



General Studies-3; Topic: Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

Indian Railways and safety challenges

Introduction

- The safety record of Indian Railways in terms of fatalities and injuries has improved.
- Over the last two decades, the number of derailments which constitute the majority of accidents has declined.
- However, it is very important to examine some critical points.

Safety System

- Focused measures like closing unmanned level crossings and emphasising track maintenance.
- Modern systems and tools make achieving a zero-fatality record an attainable goal.
- Allocating nearly 25% of Union government's total capex towards Indian Railways.
- Kavach system, an indigenous signalling system that also prevents collisions.

Government Initiatives

- **KAVACH** is an indigenously developed Automatic Train Protection (ATP) System for Indian Railways.
- **Rashtriya Rail Sanraksha Kosh**, a dedicated fund aimed at carrying out safety-related work in a systematic manner.
- **Project Mission Raftar**: The goal is to double the average speed of freight trains and increase passenger train speed by 50%.
- Electrification of railway lines, the expansion of rail networks, and the introduction of high-speed and ultra-high-speed lines, such as the **Vande Bharat Express**.
- Lighter and safer coaches for Mail/Express trains.
- The government has been working towards the elimination of manned level crossings.
- Installation of fire and smoke detection systems in coaches.

Concerns / Challenges

- Human failure is a major reason for accidents.
- Assigning blame to lower-level functionaries repeats with each serious accident.
- Limited capacity in the supporting industry.
- Slow rollout of Kavach system.
- There are some safety-critical categories where work is intensely continuous, such as loco crew, train manager, station master, pointsman and signal maintainer.
- Any vacancies in these categories mean stress and overwork for the existing staff.
- There are nearly 20,000 vacancies for loco pilot/assistant loco pilot positions.
- Inaction in employing AI-enabled applications to improve safety post mortems and provide actionable alerts.
- Capital available to be invested in newer technologies is limited

Way Forward

- Priority implementation of Kavach in Automatic Signalling territories and in locomotives.
- Extensive digital data from station data loggers and microprocessors on locomotives and trains can be effectively managed by AI.
- There is need for an independent mechanism for safety regulation.
- Creation of a **statutory Railway Safety Authority** with enough powers to have a safety oversight on the operational mode of Railways.
- Allocate more funds for track renewal, bridge repair, signalling upgrade, coach refurbishment, etc.
- Provide regular and comprehensive training to the railway staff on the latest technologies, equipment, systems, safety rules and procedures.
- Need for debates in Parliament to forge a political consensus on the direction of growth of Indian Railways.