

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

RAJYA SABHA
UNSTARRED QUESTION NO.3296
ANSWERED ON 28.03.2025

RAILWAY MODERNIZATION AND SAFETY

3296. SHRI AYODHYA RAMI REDDY ALLA:

Will the Minister of RAILWAYS be pleased to state:

- (a) the measures that can be taken to modernize India's railway infrastructure and improve safety standards, particularly in the context of growing passenger traffic and increasing concerns around safety;
- (b) the manner in which Government can promote investment in railway infrastructure and encourage public-private partnerships in this sector, particularly through initiatives such as the railway station redevelopment program; and
- (c) the role that technology can play in improving railway safety and efficiency, particularly through the adoption of innovative solutions such as automation and analytics?

ANSWER

MINISTER OF RAILWAYS, INFORMATION & BROADCASTING AND
ELECTRONICS & INFORMATION TECHNOLOGY

(SHRI ASHWINI VAISHNAW)

(a) to (c): Safety is accorded the highest priority on Indian Railways. The various safety measures taken to enhance safety in train operations are as under:

1. On Indian Railways, the expenditure on Safety related activities has increased over the years as under:

Expenditure on Safety related activities (Rs. in Cr.)					
	2013-14 (Act.)	2022-23 (Act.)	2023-24 (Act.)	RE 2024-25	BE 2025-26
Maintenance of Permanent Way & Works	9172	18,115	20,322	21,800	23,316

Maintenance of Motive Power and Rolling Stock	14796	27,086	30,864	31,540	30,666
Maintenance of Machines	5406	9,828	10,772	12,112	12,880
Road Safety LCs and ROB's/RUBs	1986	5,347	6,662	8,184	7,706
Track Renewals	4985	16,326	17,850	22,669	22,800
Bridge Works	390	1,050	1,907	2,130	2,169
Signal & Telecom Works	905	2,456	3,751	6,006	6,800
Workshops Incl. PUs and Misc. expenditure on Safety	1823	7,119	9,523	9,581	10,134
Total	39463	87,327	1,01,651	1,14,022	1,16,470

2. Electrical/Electronic Interlocking Systems with centralized operation of points and signals have been provided at 6,623 stations up to 28.02.2025 to eliminate accident due to human failure.
3. Interlocking of Level Crossing (LC) Gates has been provided at 11,089 level Crossing Gates up to 28.02.2025 for enhancing safety at LC gates.
4. Complete Track Circuiting of stations to enhance safety by verification of track occupancy by electrical means has been provided at 6,631 stations up to 28.02.2025.
5. Kavach is a highly technology intensive system, which requires safety certification of highest order. Kavach was adopted as a National ATP system in July 2020. Kavach is provided progressively in phased manner. Kavach has already been deployed on 1548 RKm on South Central Railway and North Central Railway. Presently, the work is in progress on Delhi-Mumbai and Delhi-Howrah corridors (approximately 3000 Route Km). Track side works on these routes have been completed on about 2066 RKm. Regular trials are being done on these sections.
6. Detailed instructions on issues related with safety of Signalling e.g. mandatory correspondence check, alteration work protocol, preparation of completion drawing, etc. have been issued.
7. System of disconnection and reconnection for S&T equipment as per protocol has been re-emphasized.

8. All locomotives are equipped with Vigilance Control Devices (VCD) to improve alertness of Loco Pilots.
9. Retro-reflective sigma boards are provided on the mast which is located two OHE masts prior to the signals in electrified territories to alert the crew about the signal ahead when visibility is low due to foggy weather.
10. A GPS based Fog Safety Device (FSD) is provided to loco pilots in fog affected areas which enables loco pilots to know the distance of the approaching landmarks like signals, level crossing gates etc.
11. Modern track structure consisting of 60kg, 90 Ultimate Tensile Strength (UTS) rails, Prestressed Concrete Sleeper (PSC) Normal/Wide base sleepers with elastic fastening, fan shaped layout turnout on PSC sleepers, Steel Channel/H-beam Sleepers on girder bridges is used while carrying out primary track renewals.
12. Mechanisation of track laying activity through use of track machines like PQRS, TRT, T-28 etc to reduce human errors.
13. Maximizing supply of 130m/260m long rail panels for increasing progress of rail renewal and avoiding welding of joints, thereby improving safety.
14. Ultrasonic Flaw Detection (USFD) testing of rails to detect flaws and timely removal of defective rails.
15. Laying of longer rails, minimizing the use of Alumino Thermic Welding and adoption of better welding technology for rails i.e. Flash Butt Welding.
16. Monitoring of track geometry by OMS (Oscillation Monitoring System) and TRC (Track Recording Cars).
17. Patrolling of railway tracks to look out for weld/rail fractures.
18. The use of Thick Web Switches and Weldable CMS Crossing in turnout renewal works.
19. Inspections at regular intervals are carried out to monitor and educate staff for observance of safe practices.
20. Web based online monitoring system of track assets viz. Track database and decision support system has been adopted to decide rationalized maintenance requirement and optimize inputs.
21. Detailed instructions on issues related with safety of Track e.g. integrated block, corridor block, worksite safety, monsoon precautions etc. have been issued.

22. Preventive maintenance of railway assets (Coaches & Wagons) is undertaken to ensure safe train operations.
23. Replacement of conventional ICF design coaches with LHB design coaches is being done.
24. All unmanned level crossings (UMLCs) on Broad Gauge (BG) route have been eliminated by January 2019.
25. Safety of Railway Bridges is ensured through regular inspection of Bridges. The requirement of repair/rehabilitation of Bridges is taken up based upon the conditions assessed during these inspections.
26. Indian Railways has displayed Statutory “Fire Notices” for widespread passenger information in all coaches. Fire posters are provided in every coach so as to educate and alert passengers regarding various Do’s and Don’ts to prevent fire. These include messages regarding not carrying any inflammable material, explosives, prohibition of smoking inside the coaches, penalties etc.
27. Production Units are providing Fire detection and suppression system in newly manufactured Power Cars and Pantry Cars, Fire and Smoke detection system in newly manufactured coaches. Progressive fitment of the same in existing coaches is also underway by Zonal Railways in a phased manner.
28. Regular counselling and training of staff is undertaken.
29. Concept of Rolling Block introduced in Indian Railways (Open Lines) General Rules vide Gazette notification dated 30.11.2023, wherein work of integrated maintenance/repair/replacement of assets is planned up to 52 weeks in advance on rolling basis and executed as per plan.

The details of the Safety related works related to better maintenance practices, Technological improvements, better infrastructure and rolling stock etc. undertaken by Railways are tabulated below:-

SN	Item	2004-05 to 2013-14	2014-15 to 2024-25 (till Jan 25)	2014-25 Vs. 2004-14
	Technological improvements			
1	Use of high-quality rails (60 Kg) (Km)	57,450 km	1.4 lakh km	More than 2 times
2	Longer Rail Panels (260m) (Km)	9,917 km	76,000 km	More than 7 times

3	Electronic Interlocking (Stations)	837 stations	3,243 stations	4 times
4	Fog Pass Safety Devices (Nos.)	As on 31.03.14: 90 nos.	As on 31.01.25: 25,293	281 times
5	Thick Web Switches (Nos.)	Nil	27,079 nos.	
Better maintenance practices				
1	Primary Rail Renewal (Track Km)	32,260 km	49,000 km	1.5 times
2	USFD (Ultra Sonic Flaw detection) Testing of Welds (Nos.)	79.43 lakh	1.9 crore	More than 2 times
3	Weld failures (Nos.)	In 2013-14: 3699 nos.	In 2024-25: 301 nos.	92 % reduction
4	Rail fractures (Nos.)	In 2013-14: 2548 nos.	In 2024-25: 243 nos.	91% reduction
Better infrastructure and Rolling stock				
1	New Track KM added (Track km)	14,985 nos.	34,000 km	More than 2 times
2	Flyovers (RoBs)/ Underpasses (RUBs) (Nos.)	4,148 nos.	12,771 nos.	More than 3 times
3	Unmanned Level crossings (nos.) on BG	As on 31.03.14: 8948	As on 31.03.24: Nil (All eliminated by 31.01.19)	Removed
4	Manufacture of LHB Coaches (Nos.)	2,337 nos.	41,551	More than 17 times

Ministry of Railways explored various models of development of stations including Public Private Partnership (PPP). Rani Kamalapati station in the state of Madhya Pradesh has already been developed and commissioned under PPP model. Presently 15 nos. of stations have been identified for development on PPP model.
