

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**

**LOK SABHA
UNSTARRED QUESTION NO. 4270
TO BE ANSWERED ON 26.03.2025**

KAVACH COVERAGE IN RAILWAYS

4270. SHRI TEJASVI SURYA:

Will the Minister of RAILWAYS be pleased to state:

- (a) the number of railway lines and networks covered and being covered by the Kavach technology in the country, division-wise;**
- (b) the status of the completion of the Kavach lines in other networks;**
- (c) the total amount sanctioned so far for the implementation of the Kavach technology;**
- (d) whether the use of Kavach would help in prevention of accidents and derailments and if so, the details thereof; and**
- (e) whether there is any similar technology in use in rail networks in other countries and if so, the details thereof?**

ANSWER

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

(SHRI ASHWINI VAISHNAW)

- (a) to (e): 1. Kavach is an indigenously developed Automatic Train Protection (ATP) system. Kavach is a highly technology intensive system, which requires safety certification of highest order (SIL-4).**
- 2. Kavach aids the Loco Pilot in running of train within specified speed limits by automatic application of brakes in case Loco Pilot fails to**

do so and also helps the trains to run safely during inclement weather.

3. **The first field trials on the passenger trains were started in February 2016. Based on the experience gained and Independent Safety Assessment of the system by Independent Safety Assessor (ISA), three firms were approved in 2018-19, for supply of Kavach Ver 3.2.**
4. **Kavach was adopted as National ATP system in July 2020.**
5. **Implementation of Kavach System involves following Key Activities:**
 - a. **Installation of Station Kavach at each and every station, block section.**
 - b. **Installation of RFID Tags throughout the track length.**
 - c. **Installation of telecom Towers throughout the section.**
 - d. **Laying of Optical Fibre Cable along the track.**
 - e. **Provision of Loco Kavach on each and every Locomotive running on Indian Railways.**
6. **Based on deployment of Kavach version 3.2 on 1465 RKm on south central Railway, lot of experience was gained. Using that further improvements were made. Finally, Kavach specification version 4.0 was approved by RDSO on 16.07.2024.**
7. **Kavach version 4.0 covers all the major features required for the diverse railway network. This is a significant milestone in safety for Indian Railways. Within a short period, IR has developed, tested and started deploying Automatic Train Protection System.**
8. **Major improvement in Version 4.0 includes increased Location Accuracy, Improved Information of Signal Aspects in bigger yard, Station to Station Kavach interface on OFC and Direct Interface to**

existing Electronic Interlocking System. With these improvements, Kavach Ver.4.0. is planned for large scale deployment over Indian Railways.

9. Progress of Key items comprising Kavach system on Indian Railways upto Feb' 2025 is as under: -

SN	Items	Progress
i	Laying of Optical Fibre Cable	5743 Km
ii	Installation of Telecom Towers	540 Nos.
iii	Provision of Kavach at Stations	664 Nos.
iv	Provision of Kavach in Loco	795 Locos
v	Installation of Track side equipment	3727 Rkm

10. Next phase of Kavach implementation is planned as under:-

- a. Project for equipping 10,000 Locomotives has been finalized. 69 number of loco sheds have been prepared for equipping with Kavach.**
- b. Bids for track side Works of Kavach for approximately 15,000 Rkm have been invited covering all GQ, GD, HDN and identified sections of Indian Railways, out of which works of 1865 Rkm have been awarded.**

11. Currently, 3 OEMs are approved for supply of Kavach System. To increase capacity and scale of implementation, trials and approval of more OEMs are at different stages.

12. Specialized training programme on Kavach are being conducted at centralized training institutes of Indian Railways to impart training

to all concerned officials. By now more than 20,000 technicians, operators and engineers have been trained on Kavach technology. Courses have been designed in collaboration with IRISSET.

- 13. The cost for provision of Track Side including Station equipment of Kavach is approximately Rs. 50 Lakhs/Km and cost for provision of Kavach equipment on locomotives is approximately Rs. 80 Lakh/Loco.**
- 14. The funds utilized on Kavach works so far is Rs. 1950 Crores. The allocation of funds during the year 2024-25 is Rs. 1112.57 Crores. Further, provision of Rs. 2000 Crores has been made for Kavach work during the year 2025-26. Requisite funds are made available as per the progress of works.**
- 15. Automatic Train Protection (ATP) System are also used in rail networks in other countries such as European Train Control System (ETCS) in European Countries, Digital Automatic Train Control (D-ATC) system in Japan etc.**
