

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS**

**LOK SABHA  
UNSTARRED QUESTION NO. 499  
TO BE ANSWERED ON 23.07.2025**

**IMPLEMENTATION OF KAVACH SYSTEM IN RAILWAYS**

**499. SHRI GAURAV GOGOI:  
SHRI ARVIND DHARMAPURI:**

**Will the Minister of RAILWAYS be pleased to state:**

- (a) the current status of implementation of the Kavach system across the Railway network including the total number of routes and trains covered as of 31st March 2025;**
- (b) the timeline for complete deployment of Kavach across the entire Railway network;**
- (c) the allocation of funds and actual expenditure incurred on the Kavach project since 2022, year-wise;**
- (d) the current status of Kavach implementation in the North-East region of the Country particularly in terms of track infrastructure, locomotive installations and operational readiness;**
- (e) whether the Government is considering specific budgetary allocations for the deployment of Kavach in the North-East region;**
- (f) the total number of loco pilots trained and engines equipped for operating Kavach system since 2022; and**
- (g) the specific steps taken/being taken to accelerate the pace of Kavach deployment on high density routes identified as most critical for safety?**

**ANSWER**

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

**(SHRI ASHWINI VAISHNAW)**

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**(a) to (g): -**

- 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 trains 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, a 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 yards, 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 14.07.2025 is as under: -**

| <b>SN</b>  | <b>Items</b>                                | <b>Progress</b>   |
|------------|---|-------------------|
| <b>i</b>   | <b>Laying of Optical Fibre Cable</b>        | <b>5856 Km</b>    |
| <b>ii</b>  | <b>Installation of Telecom Towers</b>       | <b>619 Nos.</b>   |
| <b>iii</b> | <b>Provision of Kavach at Stations</b>      | <b>708 Nos.</b>   |
| <b>iv</b>  | <b>Provision of Kavach in Loco</b>          | <b>1107 Locos</b> |
| <b>v</b>   | <b>Installation of Track side equipment</b> | <b>4001 Rkm</b>   |

- 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 14847 RKm have been awarded in which some of the sections of North-East Region are also included.**

**11. Specialized training programmes on Kavach are being conducted at centralized training institutes of Indian Railways to impart training to all concerned officials. By now more than 30,000 technicians, operators and engineers have been trained on Kavach technology. This includes 23,612 Loco Pilots & Assistant Loco Pilots. Courses have been designed in collaboration with IRISSET.**

**12. 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.**

**13. The funds utilized on Kavach works so far up to June'25 is Rs. 2015 Crores. The allocation of funds during the year 2025-26 is Rs. 1673.19 Crores. Requisite funds are made available as per the progress of works.**

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