

Indian Railways' AI-enabled Intrusion Detection System (IDS); Designed to Generate Alerts for Loco Pilots, Station Masters and Control Room to Prevent Death of Elephants on Railway Tracks Using Distributed Acoustic Sensors (DAS)

IDS Works Sanctioned Across Zones Covering NFR (403.42 Rkms), ECOR (368.70 Rkms), SR (55.85 Rkms), NR (52 Rkms), SER (55 Rkms), NER (99.18 Rkms), WR (115 Rkms) and ECR (20.3 Rkms)

Posted On: 04 FEB 2026 4:56PM by PIB Delhi

The Ministry of Railways, in coordination with Ministry of Environment, Forest & Climate Change, has taken several protection measures to prevent elephant hitting on railway tracks, which are as under:

(i) One of the innovative measures taken is development of AI-enabled Intrusion Detection System (IDS) for detecting presence of elephants on Railway tracks using Distributed Acoustic Sensors (DAS). The system components include Optical Fibre, hardware and pre-installed signatures of elephant locomotion. The system is designed to generate alerts for loco pilots, station masters and Control Room about the movement of elephants in proximity of railway tracks, for taking timely preventive action.

Presently, IDS system is working over 141 Rkms on critical & vulnerable locations identified by forest department in Northeast Frontier Railway. Works of IDS have also been sanctioned for identified corridors across Indian Railways covering NFR (403.42 Rkms), ECOR (368.70 Rkms), SR (55.85 Rkms), NR (52 Rkms), SER (55 Rkms), NER (99.18 Rkms), WR (115 Rkms) & ECR (20.3 Rkms).

(ii) In case of any hitting incidence of elephant with train, Zonal Railways investigate the matter in close coordination with Forest department and takes immediate steps accordingly. These include imposition of suitable speed restrictions at identified locations and alerting train crews as well as station masters. Regular meetings with concerned forest officials are conducted to update and sensitize the train crew. In the past five years, an average about 16 incidents have been reported.

(iii) Construction of underpasses and ramps for the movement of elephants at identified locations.

(iv) Installation of suitable fencing along tracks in vulnerable locations to discourage elephants from approaching towards railway lines.

(v) Provision of signage boards at all identified elephant corridors to pre-warn the loco pilots.

(vi) Clearance of vegetation and edible items surrounding the track within railway land.

(vii) Providing LED lights with a solar system in forest area.

(viii) Deployment of elephant trackers engaged by Forest Department for timely action by alerting station master and loco pilots, are taken.

(ix) To prevent the movement of wild animals/ elephants near railway tracks, innovative Honey Bee buzzer devices have been installed at level crossings. The sound created by this device acts as a repellent to move elephants away from railway track.

(x) Thermal vision camera is also being tried for detecting presence of wild animals on straight track during night/poor visibility which alerts loco pilots for presence of wild animals.

This information was provided by the Union Minister for Railways, Information & Broadcasting and Electronics & Information Technology, Shri Ashwini Vaishnaw, in a written reply to a question in Lok Sabha today.

Dharmendra Tewari/ Dr. Nayan Solanki

(Release ID: 2223196) Visitor Counter : 225

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