

# Guarding Giants on Rails

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## Guarding Giants on Rails : A National Plan to Prevent Train-Elephant Collisions

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### Context

India is home to the largest population of **Asian elephants**, which frequently come into conflict with infrastructure projects, especially **railways**. In recent years, increasing elephant fatalities due to **train collisions** have raised serious ecological concerns. Addressing this issue has become crucial to safeguard biodiversity while pursuing development.

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### Introduction

A recent joint survey by the central government has highlighted the scale of **railway-wildlife conflict** in India. Since **2009**, at least **186 elephants** have been killed on railway tracks. In response, the **Centre has identified 77 railway stretches across 14 states** for urgent intervention to reduce elephant mortality. This initiative marks a significant step towards integrating **wildlife conservation** into **transportation planning**.

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### Scope and Key Findings of the Joint Survey

The survey was conducted by the **Ministry of Environment, Ministry of Railways, and State Forest Departments**.

The survey covered **127 railway stretches**, spanning **3,452 km**, with a focus on elephant movement and past accident data.

Out of these, **77 stretches** were marked as **high-priority zones** needing immediate action.

Inspections were carried out using **on-foot and trolley-based methods**, assessing:

- **Track elevation**
- **Vegetation cover**

- **Drainage systems**
- **Existing infrastructure**

This was the first comprehensive and **systematic assessment** of railway-wildlife conflict zones in India.

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### **Proposed Mitigation Measures**

To address the risk of elephant deaths, the government has proposed the construction of **705 mitigation structures**, including:

- **503 ramps and level crossings**
- **72 bridge extensions or modifications**
- **65 underpasses**
- **22 overpasses**
- **39 fencing, barricading, or trenching structures**
- **4 exit ramps**

These structures aim to either allow safe passage for elephants or divert them away from dangerous railway lines.

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### **Focus States Based on Elephant Populations**

Priority has been given to states with significant elephant presence and high accident risk.

- **Assam** will receive **131 level crossings with ramps**
- **Maharashtra** will receive **125 crossings**
- **Uttar Pradesh** will get **92 such structures**

As per the **2017 Elephant Census**:

- **Karnataka** has **6,049 elephants**
- **Assam** has **5,719**
- **Kerala** has **5,706**
- **Tamil Nadu** has **2,761**

These states combine **dense forest habitats** with **busy railway lines**, making them key intervention areas.

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### Evolution of Wildlife-Railway Collaboration

Formal discussions began in **August 2022**, identifying **110 railway stretches** in sensitive **elephant and tiger landscapes**.

Some safety measures already existed, but this initiative aims to create a **nationwide coordinated mitigation framework**.

**Railway staff** are now being trained in **elephant ecology** at the **Wildlife Institute of India**.

These **master trainers** educate **loco pilots and staff** on techniques to reduce collision risks.

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### Use of Technology: **Intrusion Detection Systems (IDS)**

To enhance safety, the Indian Railways is deploying **Artificial Intelligence-based Intrusion Detection Systems (IDS)**, especially in the **Northeast Frontier Railway**.

- IDS detects elephant presence and alerts control rooms and train operators.
- By **2025**, IDS has been implemented over **141 km**, with plans to expand to **1,158 km**.
- A major stretch includes **207.8 km in Odisha** (Sambalpur division).
- The project spans **9 railway zones**, including NFR, East Coast Railway, Southern Railway, and Northern Railway.
- Estimated cost for IDS rollout is **Rs. 208 crore**.

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## Conclusion

The identification of critical railway stretches and the introduction of **structural and technological solutions** reflect a policy shift towards **ecologically sensitive infrastructure development**. As India continues to expand its railway network, integrating **wildlife safety** into project planning is essential. These efforts also align with India's commitments under international agreements such as the **Convention on Migratory Species (CMS)** and the **Convention on Biological Diversity (CBD)**, ensuring that progress does not come at the cost of biodiversity.



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