BACKGROUNDERS
Press Information Bureau
Government of India

Redefining India's Highways

Driving Innovation, Delivering Connectivity

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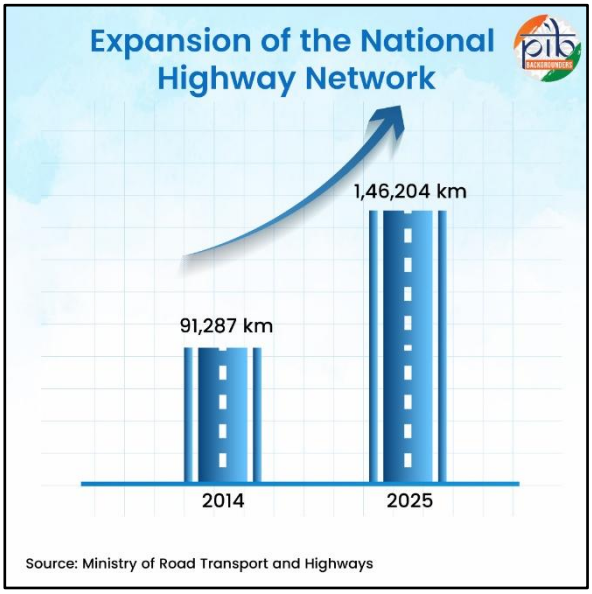
Key Takeaways

- India's Highways are **transforming with the digitization** of every phase from **planning to tolling**, making them both physical and data-driven assets.
- **FASTag** has revolutionized the country's Electronic Toll Collection system with nearly **98% penetration** and over **8 crore users**.
- The **Rajmargyatra app, with 15 lakh+ downloads** is India's top highway travel app enhancing the overall experience of commuters.

Paving the way for New-Age Highways

In the age of digital revolution, India's highways are no longer just stretches of asphalt and concrete; they are evolving into intelligent backbones of mobility and data, enabling seamless transport and real-time information flow. The vision of smart networks is reshaping how we travel, transport goods, manage tolls, and even access the internet on the move. Once seen merely as physical connectors between cities and states, the country's highways are now being reimagined as smart corridors of connectivity and control, designed not just for vehicles, but for data, communication, and real-time decision-making.

The scale of this transformation is as vast as the network itself. As of **March 2025**, India's road network stands at more than **63 lakh kilometres**, the **second largest in the world**. Within this, the **National Highway network has grown to 1,46,204 kilometres**, up from **91,287 kilometres in 2013–14**, a remarkable **increase of about 60%.** Between 2014 and 2025 alone, the country has added **54,917 kilometres** of new national highways, a feat that reflects not only construction prowess but also a pressing need for digitally enabled management and monitoring of such a massive asset. In a sweeping move to enhance efficiency and streamline operations, **the government has adopted a comprehensive 360-degree digital transformation across all major phases of a highway project's lifecycle.** From planning and detailed project reports (DPR) to construction, maintenance, tolling, and network upgradation, core processes are being streamlined to enhance system performance and promote ease of doing business.



Digital Tolling & Payment Reforms

From paper tickets and cash booths to seamless, sensor-driven travel, India's national highways are undergoing a quiet revolution. In a bid to cut down on wait times, reduce fuel wastage, and plug revenue leakages, the country has been steadily overhauling its toll collection system with digital-first solutions.

One Tag, All Roads: FASTag and NETC Powering Toll Payments

To streamline toll collection across India's highways, the **National Payments Corporation of India (NPCI)** has developed the **National Electronic Toll Collection (NETC)** program, a unified, interoperable platform for electronic toll payments. The system facilitates smooth transactions through a centralized clearing house for settlements and dispute resolution.

- At the core of NETC is **FASTag**, a **Radio Frequency Identification (RFID)** based device affixed to a vehicle's windscreen. It allows toll payments to be made automatically from the user's linked account without stopping at the plaza. With standardised processes and specifications, FASTag ensures that commuters can use a single tag at any toll booth across the country, regardless of the operator managing the toll plaza. With a **penetration rate** of approximately **98%** and more than **8 crore users**, FASTag has transformed the Electronic Toll Collection system across the country.

- Offering a hassle-free way to travel across India's highways is the **FASTag Annual Pass**. Designed for non-commercial vehicles, the pass provides unlimited convenience with a **one-time payment of ₹3,000**, valid for **one year or 200 toll plaza crossings** across **1,150 toll**

plazas on National Highways and Expressways. Activated within two hours via the Rajmargyatra app or NHAI website, the pass eliminates frequent recharges, ensuring a seamless and efficient travel experience for highway users.

- The **FASTag Annual Pass**, crossed the benchmark of **twenty-five lakh users** with around **5.67 crore transactions** recorded in two months after its launch on 15th August 2025 across the country, reflecting strong demand for hassle-free toll payments.

- To push digital payments and reduce cash transactions at toll plazas, the government has amended the **National Highways Fee Rules, 2008**, effective **November 15, 2025**. Under the revised rules, **non-FASTag users** paying tolls **in cash** will be charged **double** the standard fee, while those opting for **UPI payments** will pay **1.25 times** the toll amount. The aim is to streamline toll collection, cut down congestion, and promote greater transparency and ease of commuting on National Highways.

- In August 2025, India launched its first **Multi-Lane Free Flow (MLFF)** tolling system at **Choryasi Fee Plaza on NH-48 in Gujarat**, a **barrier-free, camera- and RFID-based** setup that reads **FASTag and vehicle numbers** in motion. The system allows **seamless toll collection without stopping**, cutting congestion, saving fuel, and reducing emissions.

Rajmargyatra: Making Highway Travel Smarter and Smoother

In a move to redefine highway travel across India, the government launched **Rajmargyatra**, a citizen-centric mobile application aimed at enhancing the overall experience of commuters on national highways. Developed with user convenience at its core, the app is seamlessly integrated with a web-based system for real-time updates and efficient grievance redressal.

- **Rajmargyatra** serves as a digital travel companion, offering a wealth of information such as details about highways, toll plazas, nearby amenities, including petrol pumps, hospitals, EV charging stations, and even live weather updates. This comprehensive data helps citizens make informed travel decisions and plan their journeys more effectively.

- To facilitate a smoother driving experience, the app is integrated with **FASTag services** for hassle-free toll payments and supports **multiple languages**, ensuring wider accessibility. Prioritizing safety, it also features **speed limit alerts and voice assistance**, promoting responsible driving habits on long stretches of road.

- A standout feature of the platform is its **user-friendly complaint system**. Travelers can quickly report highway-related issues such as potholes, maintenance concerns, unauthorized structures, or safety hazards by uploading **geo-tagged photos or videos** and tracking the progress of their complaints. This not only improves accountability but also enhances transparency in the management of road infrastructure.

The **Rajmargyatra** app has rapidly gained traction among Indian commuters, climbing to the **23rd spot** in the overall rankings on Google Play Store and securing the **2nd spot in the travel category**. With **over 15 lakh downloads** and an impressive **user rating of 4.5 stars**, the app has emerged as a popular digital tool for highway travelers across the country. In a significant achievement, Rajmargyatra also became the **top-performing government app** just **four days after the launch of the FASTag Annual Pass feature**, marking a major accomplishment in its adoption and impact.

NHAI One: Digital Backbone for Highways

To boost operational efficiency and ensure the timely execution of infrastructure projects, the National Highways Authority of India (NHAI) has launched the 'NHAI One' mobile **application**, a comprehensive platform that streamlines internal processes and enhances on-ground coordination across the national highway network. **NHAI One** integrates five core areas of NHAI's project operations: **Field Staff Attendance, Highway Maintenance, Road Safety Audits, Toilet Maintenance**, and **Daily Construction Audits via Request for Inspections (RFI)**. By consolidating these functions into a single digital interface, the app empowers field teams and supervisory personnel to manage tasks more effectively and in real-time.

From **Regional Officers (ROs)** and **Project Directors (PDs)** to **contractors, engineers, safety auditors**, and **toilet supervisors at toll plazas**, the app enables last-mile users to report, update, and track project-related activities directly from the field. With features like **geo-tagging and time-stamping**, NHAI One enhances accountability and ensures accurate documentation of on-site progress and compliance. Beyond improving internal efficiency, the app plays a key role in bridging the gap between project execution and public-facing service delivery by enabling faster response to infrastructure issues and smoother implementation of highway development plans.

Mapping India's Highways: The Role of GIS & PM Gati Shakti

Digital maps and spatial intelligence are reshaping how highways are envisioned and built. Behind this change is the powerful synergy between **Geographic Information System (GIS)** and the Government's flagship initiative, **PM Gati Shakti National Master Plan (NMP)**. Fast becoming the digital command centre for infrastructure development in India, especially for highways, the **NMP Portal** acts as a comprehensive digital atlas for integrated, multimodal connectivity. At its core is a powerful **GIS-based platform** that hosts over **550 layers of live data**, including economic clusters, logistics hubs, social infrastructure, environmental features, and more. With this clarity, road alignments can be planned with minimal disruption, maximum efficiency, and faster clearances.

In a major milestone, the **Ministry of Road Transport and Highways** has **uploaded and validated the entire National Highway network (~1.46 Lakh kms) onto the GIS-based NMP portal**. This marks a crucial shift in how India's highways are planned and executed, from fragmented, paper-based processes to **geo-intelligent planning** with nationwide visibility.

Technology Driving Intelligent Transport System

When we talk about tech powered corridors, the pavement is only half the story. The other half lies in systems that sense, analyze, enforce, and react, collectively known as **Intelligent Transport System (ITS)**. ITS in India is being implemented primarily through **Advanced Traffic Management System (ATMS)** and is gradually being integrated into a broader **Vehicle-to-Everything (V2X)** communication ecosystem. These systems are designed to significantly **reduce road accidents**, **minimize traffic violations**, and **accelerate emergency response times**.

ATMS has been deployed on major expressways like the **Delhi–Meerut Expressway, Trans-Haryana Expressway**, and the **Eastern Peripheral Expressway**, enabling faster incident detection and quicker response times. Importantly, ATMS installation is now a default component in new high-speed NH

projects and is also being adapted as **standalone systems** on key existing corridors, a clear signal that India's roads are shifting to intelligence. On corridors like the Bengaluru–Mysore Expressway, the accident data revealed a **significant drop in fatalities** post-implementation of the Advanced Traffic Management in July 2024, indicating that smart enforcement is saving lives.

The government is enhancing highway transparency and safety with smart technologies rolling out **Project Information Sign Boards** featuring QR codes for real-time project details, emergency helplines, and nearby amenities like hospitals, petrol pumps, and e-charging stations, while **Network Survey Vehicles (NSVs)** equipped with **3D laser systems**, **360° cameras**, etc. will be deployed across **23 states**, covering **20,933 km** to automatically detect road defects, ensuring smoother, safer, and more informed travel experiences.

Green Miles Ahead: Commitment to Sustainable Infrastructure

India's commitment to sustainable infrastructure is also reflected in the **Green Highways Mission**, launched under the Green Highways (Plantation, Transplantation, Beautification and Maintenance) Policy, 2015. Its objectives include minimising pollution and noise, preventing soil erosion, and generating employment opportunities. In 2023–24, the National Highways Authority of India (NHAI) planted **over 56 lakh saplings**, followed by **another 67.47 lakh in 2024–25**. Together, these efforts have taken the total count of trees planted along national highways to **over 4.69 crore** since the mission's inception, but the green transformation doesn't stop at plantations.

NHAI has also focused on reviving water bodies along highways. Under **Mission Amrit Sarovar**, launched in April 2022 with a view to conserve water for the future, it has developed **467 water bodies** across India. This initiative has helped restore local ecosystems and provided around **2.4 crore cubic meters** of soil for highway construction, leading to an estimated **₹16,690 crore in cost savings**. In 2023–24, NHAI used **more than 631 lakh metric tonnes** of recycled materials like fly ash,

plastic waste, and reused asphalt for building national highways, promoting eco-friendly and sustainable construction.

Beyond Conventional Highways

India's highways are evolving from engines of transport into engines of transformation. What began as a mission to connect cities has grown into an ambitious effort to connect systems, linking people, data, and decisions through a web of smart, sustainable, and digitally empowered infrastructure. The integration of **GIS-driven planning, intelligent traffic systems, digital tolling, and citizen-centric apps** has turned the highway network into a structure that senses, responds, and learns in real time. Each expressway now doubles as a channel of connectivity and a node of national intelligence, ensuring that mobility in India is not just faster, but safer, cleaner, and more transparent. Every kilometer carries more than traffic; it carries **trust**, **technology**, and **transformation**.

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