



# India's Journey of Infrastructure Development

**For Prelims:** [Infrastructure](#), [GPS](#), [Galathea Bay](#), [India-Middle East-Europe Economic Corridor](#), [Sagarmala](#), [Namo Bharat train](#), [RRTS Corridor](#), [Parvatmala Programme](#), [Ukraine](#), [Gaza](#), [Delhi-Mumbai Expressway](#), [PM GatiShakti National Master Plan](#), [Dedicated Freight Corridors](#), [KAVACH](#), [Alternative Fuels](#), [Green Building](#), [PLI](#).

**For Mains:** Achievements, challenges and way forward for India's Infrastructure Development.

[Source: BS](#)

## Why in News?

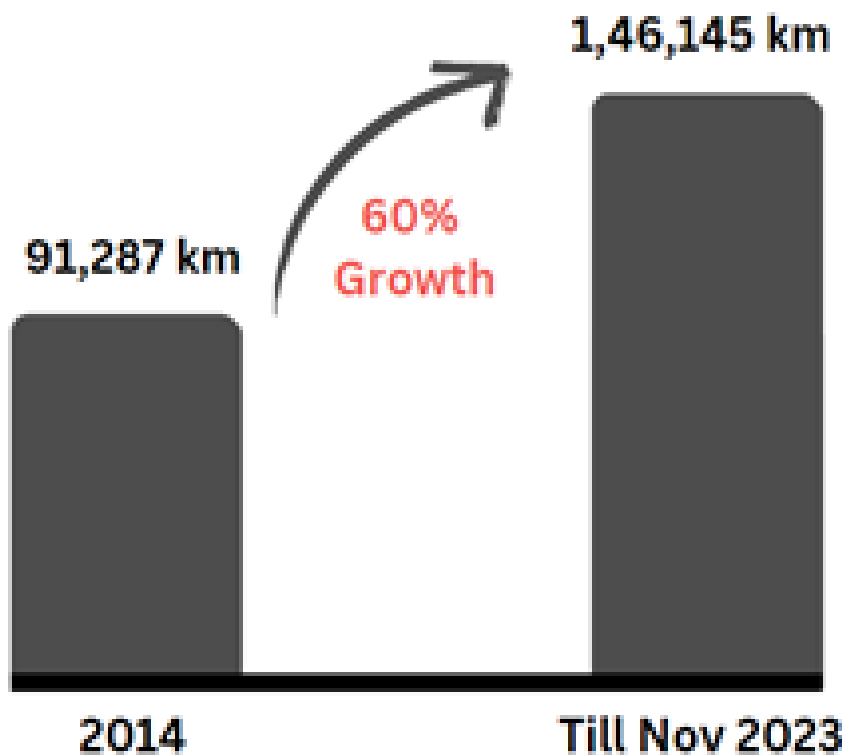
India's infrastructure has transformed over the past 25 years, with increased progress and private participation. However, challenges remain as 90% of the required infrastructure is yet to be built to reach its USD 30 trillion economy goal by 2047.

## What are India's Achievements in the Infrastructure Sector by 2024?

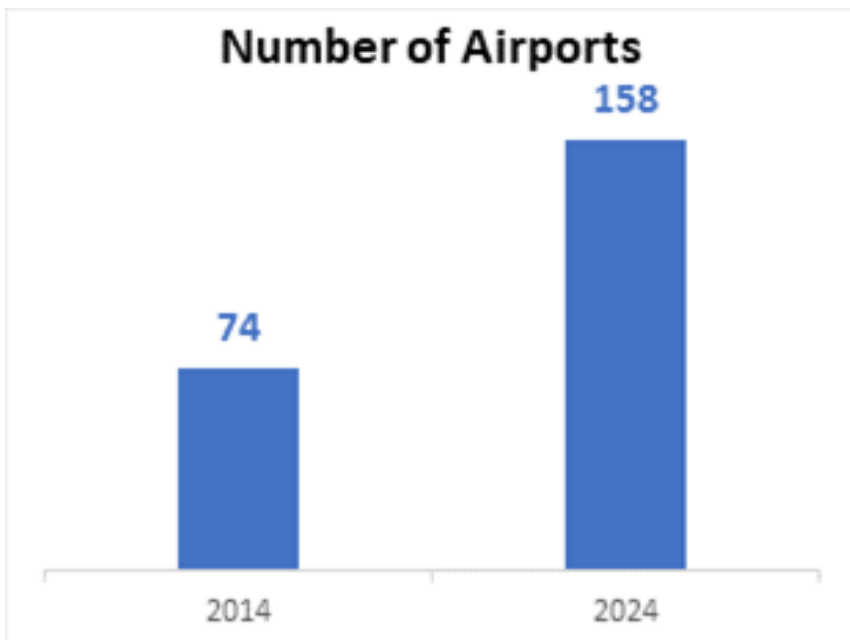
- **Roads and Highways:** Road network nearly tripled to 146,000 km since 2000, featuring modern access-controlled expressways and [GPS-based toll systems](#).
  - Since 2014, the government has built 3.74 lakh km of rural roads, connecting over 99% of rural habitations and improving accessibility.
  - Toll collections reached Rs 2.1 trillion, over 25 years, reflecting robust private sector participation.

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# Total Length of National Highway



- **Railways:** India's first **bullet train project**, with trainsets capable of running at **280 km/h** is set for completion by **2026**.
  - As of December 2023, **93.83%** of the **broad-gauge tracks** (called **large line and distance between the two tracks is 5 feet 6 inches**) were electrified, up from 21,801 km in 2014.
  - A **reduction in consequential accidents** over the past decade despite several high-profile incidents like the Kanchenjunga Express crash.
- **Maritime Sector:** India plans to invest **Rs 54 trillion** to become a **top-five shipbuilding nation by 2047**.
  - Mega ports like **Galathea Bay** and the **India-Middle East-Europe Economic Corridor** are being developed to boost trade connectivity.
  - The government has launched **839 Sagarmala projects**, including **port modernization and coastal connectivity**, with an investment of **Rs 5.8 lakh crore**.
- **Aviation:** Weekly domestic flights increased from **3,568 in 2000 to 22,484 in 2024**.
  - Low-cost carriers like **IndiGo** dominate the market, democratizing air travel for millions.
  - **Orders for over 1,000 planes** from Air India and IndiGo signal long-term growth.
  - The total number of **operational airports stands at 158**, with **84 airports** constructed between **2014 and 2024**.



- **Urban Metro:** The metro network has grown from **248 km in 2014 to 945 km by 2024**, serving **21 cities** and **1 crore daily passengers**.
  - The **Namo Bharat train** on the **Delhi-Meerut RRTS corridor** enhances regional connectivity and urban transport.
- **Ropeways Development:** The **Parvatmala Programme** has seen the initiation of **32 ropeway projects**, enhancing connectivity in difficult terrains and reducing urban congestion.

**Note:** India ranked **38<sup>th</sup>** in the World Bank's **Logistics Performance Index (LPI) 2023**.

## What are the Challenges in India's Infrastructure Sector?

- **Stalled and Delayed Projects:** The **Rs 10 trillion Bharatmala Project** was **shelved** due to red tape, while the **Rs 20 trillion Vision 2047 plan** has been **deferred** following a policy shift.
  - Financial constraints and **underutilization of resources** hinder large-scale projects like the **Delhi-Mumbai Expressway** and the **India-Middle East-Europe Economic Corridor**.
  - India needs significant investments to become a **USD 30 trillion economy by 2047**, with **90% of infrastructure still to be built**.
- **Sluggish Progress:** Railway route expansion has been slow, with only 231 km of new tracks added annually on average since 2000, reflecting less than a kilometer per day.
  - Contract awarding for highway projects fell drastically, with only **1,152 km awarded by August 2024**, a historic low.
- **Private Sector Dependency:** While private sector involvement has grown, the **recycling of capital** for projects remains a challenge.
  - Toll collection has raised **equity concerns**, with **private corporations** receiving **Rs 1.4 trillion of the Rs 2.1 trillion** collected since 2000.
  - **Recycling of capital** is a strategy of **selling non-core or underperforming assets** and **reinvesting** in more profitable opportunities.
- **Maritime Disruption:** The maritime sector struggles to meet its 2047 goal of becoming a top-5 shipbuilding nation, hindered by **Ukraine and Gaza wars** and the collapse of the **global supply chain**.
- **Aviation Sector Bottlenecks:** Intense competition has led to the **bankruptcy** of several airlines, including **Jet Airways, Kingfisher Airlines, and Go First**.
- Market consolidation between **IndiGo and privatised Air India** limits competition and poses risks of **monopolistic tendencies**.

## What are Government Initiatives for Infrastructure Development?

- [PM Gati Shakti Scheme](#)
- [Bharatmala scheme](#)
- [National Infrastructure Pipeline \(NIP\)](#)
- [Sagarmala Project](#)
- [Ude Desh Ka Aam Nagrik \(UDAN\)](#)

## Way Forward

- **Integrated Infrastructure:** The [PM GatiShakti National Master Plan](#) ensures infrastructure projects complement each other, reducing delays and duplication, while boosting **high-speed connectivity**.
  - High-speed transport networks, such as **expressways, high-speed rail corridors, dedicated freight corridors**, upgraded airports, and **multi-modal logistics parks** boost trade and supply chain performance.
- **Safer and Resilient Infrastructure:** The government's initiatives, like [KAVACH](#) for railways and the **Advanced Traffic Management System**, aim to reduce accidents and improve safety.
  - Adopting technologies like [Advanced Driver Assistance Systems \(ADAS\)](#) in vehicles and building **safer infrastructure** will further protect citizens and reduce fatalities.
- **Incorporating Green Technologies:** The shift to [EVs](#) and [alternative fuels](#) in public transport will reduce the transportation sector's carbon footprint, with schemes like [FAME-II](#) and [PLI](#) accelerating this transition.
  - Focusing on [green building](#) practices, water conservation, [waste management](#), and renewable energy will make future infrastructure sustainable and climate-resilient.
- **Technological Integration:** The use of technology, such as [FASTags](#) for smooth toll payments and [Digiyatra apps](#) for easy airport check-ins, enhance convenience and save travel time.
- **Policy and Regulatory Reforms:** India must pursue regulatory reforms and a clear policy framework to **boost private sector investment**, especially in ports, railways, and aviation, to meet infrastructure targets
  - The **government, private sector, and local communities** should collaborate to develop a **multi-year National Transport Strategy**, including essential policies and investments.

### Drishti Mains Question:

Analyze the achievements and challenges in India's infrastructure sector and suggest measures for its future growth.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

### Prelims

Q. In India, the term "Public Key Infrastructure" is used in the context of (2020)

- (a) Digital security infrastructure
- (b) Food security infrastructure
- (c) Health care and education infrastructure
- (d) Telecommunication and transportation infrastructure

Ans: (a)

**Q. With reference to 'National Investment and Infrastructure Fund', which of the following statements is/are correct? (2017)**

1. It is an organ of NITI Aayog.
2. It has a corpus of `4,00,000 crore at present.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

**Ans: (d)**

**Mains:**

**Q.** "Investment in infrastructure is essential for more rapid and inclusive economic growth." Discuss in the light of India's experience. (2021)

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