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Bullet Train in India: White Elephant or Indispensable?

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Abstract

The term Train includes **"a light locomotive, self-propelled rail vehicle".** Railway history began with early in the 17th Century. The Indian Railways network plays a vital role in ensuring seamless connectivity across the country. Indian Railways ranks as the **fourth largest railway network** in the world. Railways are the backbone of India also known as **"life line of the nation".** Indian railways play a significant role for mass transport, linking remote areas, moving bulk goods and passengers. On 16th April2025, 170 years ago, the first passenger train ran from Bombay to Thane. India's railway **journey began in** 1853, with a**s team engine** (boiling water to create steam). In the 1950s and 1960s India introduced **diesel engines** as the need for faster and high-capacity transportation. Indian Railways turned to **electric engines** which was started in 1920 but fully adopted after the 1980.Since establishment the railways have transformed dramatically, now focusing on developing **"bullet"** trains for the future. The present paper deals with the need of the bullet train in India. Arguments favors for the bullet train along with criticism also discussed in this paper.

Keywords: *Steam engine; Diesel engine; Electric engine; Freight and Bullet train*

1. Introduction

The first passenger rail in India was started on 16th April 1853 between Bombay to Thane. Lord Dalhousie, Governor General of India was considered as father of Indian railways for creating a comprehensive plan to establish and boost the railway network in India. **The first loco pilots were namely Sultan, Sahib and Singh**. Indian Railways are owned by Government of India under Ministry of Railways and it is managed by railway board headed by a chairman. The oldest running train in India is the Netaji Express, formerly known as the Kalka Mail, which was started in 1st Jan, 1866. The first railway station was Bori Bunder, presently known as **Chhatrapati Shivaji Maharaj Terminus** in Mumbai, started in 1853.

With over **175 years** of history, Indian Railways now operate the world's fourth-largest rail network, stretching over 1.2 lakh K.M and serving crores of passengers. Indian Railways runs over 25,000 trains daily, including 13,200 passenger trains (Express, Mail, Superfast etc.)

In India, Sikkim is the only state that does not have any operational railway stations due to Himalayan terrain. The Vande Bharat Express is India's fastest train, capable of reaching 180 km/h during trials, though its operational speed is typically capped around the longest train route in India is the Dibrugarh-Kanyakumari Vivek Express India has 7,300 railway stations.

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2. Management of Indian Railways

Indian Railways is managed as a central government entity under the Ministry of Railways, run by a Central Railway Board, divided into geographical zones for semi-autonomous operations and further into smaller divisions for efficient management, planning, safety, and running of its vast network.

3. Top- Governance

Ministry of Railways- Headed by a Union Minister.

Railways Board- Apex body, Executed by a Chairman and members for Operations, Infrastructure, Finance, HRand planning.

4. Operational Structure

Zonal Railways: Total Zones-18. Every zone is headed by a General Manager and divided into divisions Example: Northern Railway, Southern Railway.

Divisions- Around 70 headed by Divisional Railway Manager.

5. Need of the Indian railways

Massive geography of India required a faster way to travel and trade. Before the railways in India bullock carts and water boats were the primary mode of transport.

Railway system enabled **better movement of agrarian grains** across the country, especially during the famines and natural calamities.

Expansion of Markets: Peasants could now send their output to cities, towns and big-small traders could access all goods from far-off areas.

6. Journey of Indian Railways

India's railway journey isn't just a tale of the past. It is a **fast-moving story of progress**with every evolution in locomotive technology, the passenger experience is also transformed.

Era	Engine type	Speed	Remarks
1850-1950	Steam	30–50 km/h	Noisy, slow, nostalgic
1950-1990	Diesel	60–90 km/h	Faster, reliable, less smoke
1990- Present	Electric	100–180 km/h	Quiet, smooth, fast

7. Growth of Tracks

S. No	Track type	length	Remarks
1	Meter Gauge	1000 mm	Historically used
2	Narrow Gauge	610/762 mm	Hill areas
3	Standard Gauge	1435 mm	Urban Metros
4	Broad Gauge	1676 mm	Most Common

8. Emerging Innovations in Indian railways

- **Hydrogen-powered trains** – Zero emissions, currently being tested.
- **Battery-electric locomotives** – For short hauls and shunting.
- **Semi-high-speed and bullet trains** – Aim to reach 320 km/h.
- **Smart train systems** – Real-time tracking and AI-assisted operations.

9. Bullet Train to India

India not only dreaming but also emphasizing “High-speed bullet train”, which is very close to becoming a reality. Bullet trains will usher a new era of development in India. In this backdrop the topic of bullet train becomes highly recommendable.

10. The advantages of bullet train are discussed below

- India is a big country and fastest growing economy with huge population; the need to travel faster has become compulsory. Air ways can meet such needs but the capacity that offers by airways cannot match with railways.

- The High-Speed Railway Line will be effective in meeting the incremental changes in present infrastructure requirement.

- Bullet train generates a new class of passengers apart from road and air ways. The average speeds higher than 250 km/h therefore bullet train will make the distance of 500 km in two hours.

- The present railway network lags substantially in extending and modernizing services. There is a serious need to separate the passenger business from freight. With the availability of bullet trains the high stress on the railways would be reduced.

- The bullet train project will create direct-indirect job opportunities moreover construction workers will also be employed during the set up.

- Bullet train shifts the pressure of urbanization from the existing urban area.

- In the backdrop of increasing pollution bullet trains are energy-efficient and environmentally friendly.

- Bullet train safety record is remarkable and has maintained a unique record of no fatal accident.

- The prime purpose of Bullet trains in India is to provide convenience to commuters. Bullet train makes a difference in freight transportation also in courier mail services, perishables transportation.

11. Bullet Train Stations of India - A Gateway to the Future

The design of each of the 12 stations between the first high-speed bullet train corridors from Mumbai to Ahmadabad of about 508 K.M will definitely reflect the spirit of the city it is located in. This will bring an instant connection with the local population and promote a deep sense of ownership of the high-speed rail system. The stations are moderately designed with contemporary architectural facade and modern technology.

12. Disadvantages and drawbacks of the Bullet train project in India

- According to the World Bank “bullet train “cost per km in India is about $27.44 million, while in China it costs between $17 and 21 million per K.M. India does not have the required technology for bullet train yet. Therefore, Japan assist the technology and give 80% of the project costs at a low rate of interest.

- Bullet train first project in India launched between Mumbai and Ahmadabad. This project costs around one lakh crore Indian Rupee.

- Bullet train travel fares are between Rs. 4000 and Rs. 5000 per passenger, this fare will prove burden on BPL passengers. Only rich people could afford such prices. At present the fares of flights are getting smaller therefore people prefer airways instead of bullet train. But in India, the poor are the ones who prefer the trains the most.

- Land pooling to bullet train may not be easy moreover this train requires separate track and electricity facility.

13. Conclusion

India is an Asia's largest economy and seventh largest economy in the world. The total area covered by the country is 3,166,391 square K.M. India also known for world's largest populated country ranks first in the world. India is the world's fifth largest economy by its GDP and wants to pass the USA, China, Germany and Japan. Now it wants to become the third-largest economy in the world in 20 years.

To become a world's largest economy India needs expanding digital/ service sectors, improving infrastructure, ensuring inclusive growth (health, education) agricultural and industrial development. Trade and commerce will play a significant role in creating jobs and boosting growth. For this high-speed transportation is must.

There are good and bad things about everything and every initiative. It's up to each nation to weigh the options fairly and make a wise decision. Undoubtedly there are costs to technological progress, but the safety and security of country citizens should be first priority. Therefore, I suggest Bullet Train to India will give fruitful gains and add to India's future dreams. The project of bullet train resonates with the Prime-Minister initiative of transforming India's infrastructure and connectivity to build a Vikasit Bharat.

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