

Infrastructure[®]

September-October 2025 Vol. 19 No. 6

TODAY

₹ 300

India's Premier Magazine for Nation Builders



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FAST FORWARDING BHARAT: **THE NEXT LEAP**

As India's first bullet train line between Mumbai and Ahmedabad approaches full commissioning by 2029, momentum is building to accelerate the rollout of additional high-speed corridors nationwide, writes Manish Pant.



In June 2022, high humidity, frequent rainfall, and oppressive monsoon temperatures were matched by intense backroom politics in Maharashtra's capital, Mumbai. Nearly 40 dissident lawmakers from the Shiv Sena party, then part of the ruling Maha Vikas Aghadi (MVA) alliance, crossed over with their leader Eknath Shinde to align with their former political partner, the BJP. The nine-day crisis in India's third-largest state ended with Shinde's swearing-in as Chief Minister on June 30.

As the 56-year-old Shiv Sena under Uddhav Thackeray split in two—like the dried-up Maharashtrian millet bread, bhakri—one person who must have heaved a sigh of relief was

Ashwini Vaishnaw, Minister for Railways.

A former bureaucrat, Vaishnaw had been handpicked two years earlier by Prime Minister Narendra Modi to lead two critical assignments: developing India as a global electronics manufacturing and export hub, and modernising the railways, including fast-tracking the Mumbai-Ahmedabad High-Speed Rail (MAHSR) corridor. However, the Maharashtra government's delay in granting approvals nearly stalled the project, which spans Gujarat and the union territory of Dadra and Nagar Haveli as well.

Once the BJP-Shiv Sena government was formed, all pending approvals were cleared within ten days. By year-end, more than 98 per cent of land had been acquired in Maharashtra—up from 71.5 per cent in June 2022—according to data from the National High-Speed Rail Corporation Ltd (NHSRCL), a subsidiary of Indian Railways. Since then,



"You could enjoy a morning *jaman* (feast) in Surat, travel to Mumbai in an hour, finish your work, and return home to spend time with your family. Similarly, from Ahmedabad, you could reach Mumbai in two hours, complete your business, and be back the same day."

- Ashwini Vaishnaw,
Minister for Railways



"This MAHSR systems package is critical for the success of the bullet train project. Proud to say that this win shall place L&T's Railways Business amongst the top global railway system integrators covering mainline, metro and high-speed rail segments."

- SN Subramanyan,
Chairman and Managing Director, L&T

Vaishnaw has repeatedly stated that the MVA government under Thackeray had unnecessarily delayed key permissions for the project.

Speaking to the media after engineers achieved a breakthrough in the construction of a 5 km tunnel section between Ghansoli and Shilphata at Thane Creek in late September, Vaishnaw remarked, "The slowdown in the

▼ A total of 465 km of viaduct is being constructed across Maharashtra, Gujarat, and Dadra & Nagar Haveli for the MAHSR corridor.



project has delayed the project by nearly two-and-a-half years. The sooner an [infrastructure] project is completed, the earlier its benefits reach the people."

Launched jointly by Prime Minister Narendra Modi and the late Japanese Prime Minister Shinzo Abe on September 14, 2017, the corridor was originally scheduled for completion by August 2022. However, land acquisition hurdles and political logjam in Maharashtra from 2020 onwards pushed timelines back. Vaishnav is now confident that the revised milestones will be met: trial runs on the Surat-Bilimora section in Gujarat by December 2027, the Ahmedabad-Thane stretch by 2028, and full operations between Ahmedabad and Bandra Kurla Complex by 2029. Services will run on the next-generation E10 Shinkansen trainsets, scheduled to debut

concurrently in Japan and India.

Transformative leverage

India's first bullet train project is more than a transport upgrade; it is a structural intervention in how the country moves, builds, and grows. As the 508-km corridor nears partial commissioning, global evidence offers a compelling lens to assess its broader impact.

One of the most cited benefits of high-speed rail (HSR) is its ability to shift demand from short-haul air and road travel. According to a 2021 McKinsey report, "HSR can shift 20-30 per cent of short-haul air and highway demand when door-to-door travel time is under three hours." This threshold is critical; it marks the point at which rail becomes not just viable, but preferable. In Europe, HSR has significantly reduced short-haul air travel, especially on routes under 800 km such as Paris-Lyon and Madrid-Barcelona. Faster city-centre connectivity, lower emissions, and competitive pricing have prompted airlines to cut or cancel flights.

This phenomenon is now visible in India. The launch of Vande Bharat semi-high-speed trains has led to a 20-30 per cent drop in airfares on certain intercity routes. Data from Indian Railways and industry sources suggest a 10-20 per cent fall in air traffic where these trains offer competitive travel times and comfort.

The MAHSR is designed to cover the Mumbai-Ahmedabad stretch in nearly two hours, well within the three-hour threshold. With up to 80 return flights per day on this corridor and a congested highway alternative, the bullet train offers a faster, more predictable, and centrally connected option. For business travellers, the time saved at check-in, security, and baggage claim could tip the scales decisively in favour of rail. "You could enjoy a morning *jaman* (feast) in Surat, travel to Mumbai in an hour, finish your work, and return home to spend time with your family. Similarly, from Ahmedabad, you could reach Mumbai in two hours, complete your business, and be back the same day," Vaishnav observes, highlighting the upcoming MAHSR corridor's time-saving potential.

Environmental benefits add further weight. India's transport sector is the third-largest emitter of carbon dioxide, with aviation among the fastest-growing contributors. Here, HSR offers a significant environmental dividend. Deloitte's 2021 report on low-carbon mobility systems notes that "shifting from air or car to HSR reduces CO₂ emissions by up to 85 per cent per passenger-kilometre compared

Mumbai-Ahmedabad High-Speed Rail (MAHSR)



• Project Timeline

- **Launch:** September 2017
- **Trial Runs:** Surat-Bilimora section by 2027
- **Second Section:** Ahmedabad-Thane by 2028
- **Full Commissioning:** Mumbai-Ahmedabad by 2029



• Route Snapshot

- **Total Length:** 508 km
- **States Covered:** Maharashtra, Gujarat, Dadra & Nagar Haveli
- **Stations:** Mumbai (BKC), Thane, Virar, Boisar, Vapi, Bilimora, Surat, Bharuch, Vadodara, Anand/Nadiad, Ahmedabad, Sabarmati



• Service Formats

- **Limited-Stop Service:** Halts only at Surat and Vadodara (1.58 hrs)
- **All-Stop Service:** Halts at all 12 stations (2.57 hrs)



• Rolling Stock

- **Trainset:** Next-generation E10 Shinkansen
- **Technology Partner:** Japan
- Customised for Indian conditions



Source: Ministry of Railways, NHSRCL, IT Research

with flights." In the context of the MAHSR corridor, this is substantial. Once fully operational, it is expected to reduce carbon emissions by approximately 2.3 million tonnes per annum, according to NHRCL estimates. This is primarily due to a modal shift from air and road travel to energy-efficient rail, powered by electricity and designed with green stations and sustainable infrastructure. With India's grid increasingly powered by renewables, the long-term carbon footprint will shrink further.

Large-scale rail infrastructure is not just a transport investment; it is an economic stimulant. The 2022 PwC-FICCI report, *Strengthening the Impact of Investments in Railway Infrastructure*, estimates that "rail projects yield a 2.5-3.5x multiplier effect on GDP through supply chains, jobs, and induced demand."

Here, the MAHSR is already catalysing industrial activity. Cement, steel, and concrete consumption have surged, with over 780,000 cubic metres of concrete poured and ten steel bridges completed. According to a project summary published on the Central Sector Projects Monitoring (CSPM) portal, a total of 16 million cubic metres of cement and 170,000 metric tonnes of steel will be used.

Forging the backbone

The project has been divided into 27 contract packages, with all major civil works—including viaducts, stations, tunnels, and bridges—finalised and awarded. Ancillary industries such as rolling stock, electronics, and signalling are seeing renewed investment, with firms like Larsen & Toubro (L&T) and Siemens India actively involved.

After securing a mega-contract from an authorised Japanese agency in January 2024 to construct 508 route km of high-speed electrification system works—the largest single railway electrification order ever placed in India—**SN Subramanyan, Chairman and Managing Director** of the engineering conglomerate **L&T**, said, "This MAHSR systems package is critical for the success of the bullet train project. Proud to say that this win shall place L&T's Railways Business amongst the top global railway system integrators covering mainline, metro and high-speed rail segments." The company has also won contracts for track works and civil packages.

In June this year, a consortium led by Dineshchandra R Agrawal Infracon, Siemens, and Siemens Mobility was awarded a major contract for advanced signalling and telecommunication technologies. "As a



"This project reflects our commitment to 'Make in India' and delivering technologies that promote sustainable and future-ready mobility."

- **Sunil Mathur**,
Managing Director and CEO, Siemens



"We assembled the entire bridge on our specialised concrete floor with the bearings in place. This allowed us to test the full load, something that wouldn't have been possible otherwise."

- **Ram Agarwal**,
CEO, Goodluck Steel

consortium, we are proud to partner with NHRCL in the prestigious high-speed rail project. This project reflects our commitment to 'Make in India' and delivering technologies that promote sustainable and future-ready mobility," **Sunil Mathur, Managing Director and CEO, Siemens**, said in a statement.

It's not just the big players driving progress. Emerging firms like **Goodluck Steel** are also shaping a future-ready domestic HSR ecosystem. The Ghaziabad-based company



8 Proposed HSR Corridors & Population Clusters

Corridor	Length (km)	Key Cities / Clusters	Estimated Population (2025)
Delhi-Ahmedabad	886	Delhi, Gurugram, Jaipur, Udaipur, Ahmedabad	~55 mn
Delhi-Amritsar	459	Delhi, Panipat, Ludhiana, Jalandhar, Amritsar	~40 mn
Delhi-Varanasi	958	Delhi, Agra, Kanpur, Lucknow, Varanasi	~50 mn
Mumbai-Nagpur	741	Mumbai, Nashik, Aurangabad, Nagpur	~45 mn
Mumbai-Hyderabad	711	Mumbai, Pune, Solapur, Hyderabad	~50 mn
Chennai-Bengaluru-Mysuru	435	Chennai, Bengaluru, Mysuru	~40 mn
Chennai-Coimbatore	426	Chennai, Vellore, Salem, Coimbatore	~30 mn
Varanasi-Howrah	760	Varanasi, Patna, Dhanbad, Kolkata	~60 mn

Source: National Rail Plan, IT Research

has built a dedicated bridge assembly plant in Bhachau, Gujarat, exclusively for the project. **Ram Agarwal, CEO**, tells **INFRASTRUCTURE TODAY** that special preparations were made to build the first structure. "Typically, railway bridges here weigh around 1,200 to 1,300 tonnes, but this was a double-connected bridge. To support it, we had to prepare a civil ground with 200 mm-thick concrete so it could bear the full weight."

Usually, when a bridge is installed on pillars, the bearings are inserted on-site. But in this case, imported bearings were directly supplied to the plant by L&T. "We assembled the entire bridge on our specialised concrete floor with the bearings in place. This allowed us to test the full load, something that wouldn't have been possible otherwise. The bridge passed all parameters set by the Japanese company," states Agarwal with immense pride. He now looks forward to contributing to future bullet train corridors.

India is not merely importing Japanese technology for the MAHSR—it is actively localising it. According to the *World Rail Market Study* by global consultancy Roland Berger and European rail supply association UNIFE

(2020-22), "HSR projects contribute to a sustained global rail supply market growth of approximately 3 per cent CAGR, with strong spillovers in rolling stock and electrification." By tapping into this momentum, India is not only reducing costs but also building long-term capability and setting new benchmarks in execution. The adoption of precast girders, automated track laying, and digital monitoring systems has raised the bar for speed and quality.

Beyond engineering feats, the corridor's true promise lies in how it reshapes regional economies and urban connectivity.

Regional integration and urban impact

A 2022 case study published in the *Sustainability Journal* by the Switzerland-based Multidisciplinary Digital Publishing Institute (MDPI) found that the MAHSR could generate "regional spillover benefits of up to 3 per cent GDP growth in connected districts, via agglomeration and labour mobility." This is particularly relevant for Tier-2 and Tier-3 cities along the corridor, where improved connectivity reduces travel time, expands

Scale and Substance



Contracts

27 contract packages awarded across civil works, stations, bridges, and systems integration



Economic Clusters

Forms a unified growth corridor from Mumbai to Ahmedabad, linking key business hubs across western India



Technology

AI, AR, LiDAR, drones, and robotics deployed for precision construction and real-time monitoring



Steel

170,000 metric tonnes, equivalent to the weight of 130,000 mid-size cars



Environment

~2.3 million tonnes per annum reduction in CO2 emissions through modal shift from road and air travel. This is roughly equivalent to planting 92 million trees annually



Construction

Over 250 km of viaducts, 25 river bridges, and a 21-km undersea and underground tunnel between BKC and Shilphata



Cement

16 million cubic metres, enough to fill 6,400 Olympic-sized swimming pools

Source: Ministry of Railways, NHSRCL, IT Research

Engineering the Future



90% Elevated Alignment

Built using Full Span Launching Method; 10× faster than conventional construction



Indigenous Machinery

First-time use of Straddle Carrier, Girder Launcher, Gantry & Transporter in India



Shinkansen-Grade Track

J-Slab ballastless system for 320 kmph trains, a first in India



Mechanised Precision

CAM Cars, Rail Feeders, Slab Laying Cars & Flash Butt Welders deployed



Track Factories

Dedicated slab manufacturing units set up in Surat and Anand



Skill Surge

1,000 engineers undergoing certification in Japanese track installation methods

Source: NHSRCL

labour markets, and enhances access to education and healthcare.

States Vaishnav, "The economies of all the major cities—Mumbai, Thane, Vapi, Surat, Vadodara, Anand, and Ahmedabad—will effectively become one. This will drive significant regional growth." He draws parallels with Japan's Shinkansen network, which catalysed regional integration following its launch in 1964. "Similar regional growth was seen in Japan when its first bullet train project was completed. Cities like Tokyo, Nagoya, Kobe, Kyoto, and Osaka evolved into a single economic zone."

Beyond speed, HSR attracts passengers through comfort and reliability. McKinsey's 2022 report on passenger preference found that "comfort, digital services, and reliability increase rail ridership by 10-15 per cent even in competitive markets." The average speed of passenger services on the Indian Railways network ranges from 35-50 km per hour for conventional trains to 80-160 km per hour for premium services such as Rajdhani, Shatabdi, and Vande Bharat. There is, therefore, ample scope for a higher upgrade like HSR on the world's fourth-largest rail network.

As for HSR stations, they are not mere transit nodes but also economic accelerators. Global design, engineering, and consulting firm Arup's 2023 report, *Transformative Rail*, observes that "HSR nodes catalyse urban redevelopment and new commercial hubs around stations." Several such case studies are emerging from the MAHSR project. One initiative is the Station Area Development along MAHSR project (SMART), which focuses on designing passenger-centric stations with seamless integration across transport modes.

"A multi-modal integration plan has been prepared in collaboration with the Ministry of Housing and Urban Affairs, Ministry of

Railways, the state governments of Gujarat and Maharashtra, and the Japan International Cooperation Agency (JICA)," says an NHSRCL official. The plan aims to ensure smooth connectivity between metro systems, buses, taxis, autos, and other local transport options to reduce transition time and enable faster, safer, and more convenient passenger movement. "Drawing upon Japan's extensive experience in developing high-speed rail station areas, their experts are providing technical guidance and recommendations to support effective and sustainable implementation," adds the official.

Catalysing the next wave

The PwC-FICCI report highlights the



"Drawing lessons from semi-high-speed initiatives such as Vande Bharat, and infrastructural frameworks like Amrit Bharat, Namo Bharat, and the Gati Shakti freight corridors, India is well-positioned to leverage HSR at the right time to catalyse both economic and technological advancement."

- TS Ramakrishnan, Railway Expert



"Thanks to the Mumbai-Ahmedabad experience, we now understand land acquisition, station design, rolling stock technology, and construction methods. It's time to begin work on the next high-speed corridors, especially because the gestation period is long."

- G Raghuram, Former Director, Indian Institute of Management (IIM)-Bangalore



"There's nothing better than a substantial investment to kickstart this, at least in the four corridors we have presented for high-speed rail. Taken together, these corridors could easily require capex in excess of ₹20 trillion at current prices."

- **Vinayak Chatterjee**, Founder and Managing Trustee, Infravision Foundation



"Such corridors are vital for easing pressure on core transport infrastructure—airports and conventional railways—along dense routes, while offering a sustainable and competitive alternative for passenger travel."

- **Jagannarayan Padmanabhan**, Senior Director & Global Head of Consulting, Crisil Intelligence

importance of institutional learning from the MAHSR. It notes that "the project offers a template for future HSR corridors in India, particularly in terms of land acquisition, inter-agency coordination, and technology transfer." Already, there are calls to launch more corridors based on these learnings.

In a study by the New Delhi-based think tank Infravision Foundation, *The Case for Developing High-Speed Rail in India*, **TS Ramakrishnan, Railway Expert**, argues that the case for HSR rests on the rapid expansion of travel demand, particularly among middle- and upper-class segments. Preliminary data

▼ Highly skilled workers execute precision viaduct construction in Gujarat's Anand district, a key stretch of the MAHSR corridor.



compiled by **INFRASTRUCTURE TODAY** from multiple sources shows that in FY2025, AC rail travel accounted for 245 billion passenger-km, air travel reached 160 billion passenger-km, and luxury bus travel was estimated at 195 billion passenger-km.

"With air travel registering annual growth of 7-10 per cent and poised to surpass AC rail travel, there is a growing need for a transport option that balances speed, capacity, and environmental sustainability. Rail travel, especially in the HSR format, is far more climate-friendly compared to air and bus alternatives," notes Ramakrishnan. Beyond environmental benefits, HSR has demonstrated profound socio-economic impacts worldwide—as seen in Japan, France, Spain, and China—where improved connectivity has transformed regional economies and urban growth.

"India stands to replicate these benefits

From Lag to Leap



Source: Ministry of Railways, NHRCL, IT Research

while also nurturing indigenous technological capabilities in alignment with its Atmanirbhar Bharat vision. Drawing lessons from semi-high-speed initiatives such as Vande Bharat, and infrastructural frameworks like Amrit Bharat, Namo Bharat, and the Gati Shakti freight corridors, India is well-positioned to leverage HSR at the right time to catalyse both economic and technological advancement," adds Ramakrishnan.

The National Rail Plan (NRP), published in December 2020, has identified eight corridors for future HSR development: Delhi-Ahmedabad, Delhi-Amritsar, Mumbai-Nagpur, Mumbai-Hyderabad, Chennai-Bengaluru, Chennai-Secunderabad, Varanasi-Howrah, and Patna-Guwahati. The NRP outlines five broad criteria: cities with populations exceeding one million; intercity distances typically between 300 and 700 km; GDP of intermediate cities; high congestion levels; and strong existing passenger flows via AC rail and air travel.

What's Holding Back the Bullet?



Land Acquisition

Delayed acquisition—especially in Maharashtra—pushed timelines and costs.



Urban Integration

Stations need better integration with rail, metro, and airports.



Financing Constraints

PPP models are unattractive; heavy reliance on bilateral loans like JICA.



Execution Bottlenecks

Political shifts and weak accountability have caused slippages.



Learning Before Scaling

Experts urge completion and review of MAHSR before announcing new corridors.



Global Lessons

China's HSR shows that only dense, high-demand routes are profitable.

Source: Infravision Foundation, IT Research

Ramakrishnan recommends refining this framework to reflect India's unique conditions, emphasising higher-cost existing travel patterns, per capita GDP as a more accurate predictor of demand, and realistic ridership expectations drawn from all modes. "Research shows that HSR is most viable when projected demand exceeds 8-10 million passengers annually on a 500-km line. Gravity-model-based analysis suggests that corridors in the 300-800 km range are best suited for phased development, offering both profitability and regional balance." His strategy also favours contiguous development to create network effects, improve efficiency, and extend HSR's reach across multiple regions, ensuring national equity in connectivity.

Based on this analysis, Ramakrishnan recommends four priority corridors that balance population density, economic strength (calculated at purchasing power parity), and regional connectivity. The Delhi-Amritsar corridor spans 665 km and serves 37.9 million people, with a per capita GDP of \$28,307. The Delhi-Ahmedabad corridor, routed via Jaipur and Gandhinagar, covers 934 km and connects 46.1 million people with a per capita GDP of \$29,123. The Delhi-Kolkata corridor, the longest at 1,740 km, passes through Lucknow, Varanasi, and Patna, serving 57.6 million people with a GDP of \$28,580. Lastly, the Mumbai-Chennai corridor, via Pune, Bengaluru, and Tirupati, spans 1,366 km and links 52.2 million people, offering the highest per capita GDP among the four at \$37,115. These corridors not only demonstrate strong demand potential but also present strategic opportunities for phased development, regional balance, and network effects.

G Raghuram, Former Director, Indian Institute of Management (IIM)-Bangalore,



"The Railways don't just need ambitious plans but credible execution frameworks, accountability mechanisms, and realistic timelines. Otherwise, public perception risks turning sceptical, and the bullet train could remain more of a political slogan than an operational reality."

- Lalit Chandra Trivedi, Former General Manager of East Central Railway and Sector Expert

believes the time is ripe for the rollout of more HSR corridors. When asked if the delay in the MAHSR project acts as a dampener, he responds promptly: "There are projects across different domains in India, and delays in one area shouldn't necessarily hold back progress in another. Personally, I thought the initial timeline—four to five years—was quite ambitious, especially for a new concept like HSR."

He proclaims that the real question is whether India should wait for the first project to be completed and assessed, or whether there is already enough understanding to move forward. "Thanks to the Mumbai-Ahmedabad experience, we now understand land acquisition, station design, rolling stock technology, and construction methods. It's time to begin work on the next high-speed corridors, especially because the gestation period is long."

Vinayak Chatterjee, Founder and Managing Trustee of the New Delhi-headquartered **Infravision Foundation**, concurs. He adds that beyond immediate socio-economic benefits, big-ticket infrastructure projects such as HSR create a mega-stimulus. "Given the current global economic context, India needs bold ideas that can absorb large-scale capital



▲ Upcoming stations like Surat are being designed for seamless multi-modal integration under a joint plan by central ministries, state governments, and JICA.

investment, trigger a revolution in domestic production and indigenisation, and spark a new wave of industrialisation." To buttress his point, he cites the success of India's auto aftermarket segment, which has made the country the third-largest auto components manufacturer globally. He believes this model must be replicated in the railway sector. "There's nothing better than a substantial investment to kickstart this, at least in the four corridors we have presented for high-speed rail. Taken together, these corridors could easily require capex in excess of ₹20 trillion at current prices. Just imagine the scale of components, suppliers, job creation, and broader economic benefits that would follow!"

Jagannarayan Padmanabhan, Senior Director and Global Head of Consulting at Crisil Intelligence, avers that HSR projects connecting metro cities to Tier-2 urban growth centres—such as the proposed Delhi-Varanasi

corridor via Aligarh, Agra, and Kanpur—have the potential to catalyse the evolution of existing hubs into new business districts. "This also strengthens economic linkages for product-specific industrial clusters by improving access to growth markets. Such corridors are vital for easing pressure on core transport infrastructure—airports and conventional railways—along dense routes, while offering a sustainable and competitive alternative for passenger travel."

He adds that the country has made substantial progress in creating an enabling ecosystem for high-speed rail and similar initiatives. "These projects present an opportunity to leverage technology transfers to enhance domestic execution capacity and reinforce India's ability to manage large, complex infrastructure programmes." Initiatives such as the NRP, the Gati Shakti Masterplan, and the establishment of NHSRCL—with its

5 Reasons to Scale High-Speed Rail in India

Proven Demand

Over 600 billion passenger-km in FY2025 across rail, road and air.

Execution Readiness

MAHSR has unlocked know-how in land, tech, and station design.

Economic Stimulus

HSR triggers 2.5-3.5x GDP multiplier; new corridors will unleash trillions in capex.

Indigenous Capability

India is building indigenous HSR tech, including rolling stock, signalling and bridges.

Institutional Readiness

NHSRCL, GatiShakti, and NRP provide a solid framework for credible scaling.



Source: IT Research

specialised mandate—have laid a robust institutional and policy foundation.

The ride ahead

Amid the opportunities unlocked by the MAHSR corridor, planners must also remain mindful of the challenges it has revealed. This is critical to ensuring the seamless execution of future HSR projects. Chief among these are technology choices, the development of a domestic vendor ecosystem for equipment, and complex land acquisition processes. For instance, land acquisition for the Maharashtra section of the corridor was only completed by January 2024. Equally, station location and integration with existing urban areas require meticulous planning to ensure effective first- and last-mile connectivity with legacy rail networks and airports.

Lalit Chandra Trivedi, Former General Manager of East Central Railway and Sector Expert, advises caution in the rollout of future HSR projects. “The project has already witnessed inordinate delays and cost escalations, largely due to prolonged land acquisition challenges, shifting political priorities, and execution bottlenecks. What was once projected as a flagship model for HSR in India has now become a cautionary tale of how timelines slip and undermine confidence.”

He asserts that before announcing additional bullet train corridors, it is critical that the first project is completed, stabilised, and its outcomes rigorously assessed. “Only then can India draw meaningful lessons in financing, technology transfer, construction practices, and ridership viability. The Railways don’t just need ambitious plans but credible execution frameworks, accountability mechanisms, and realistic timelines. Otherwise, public perception risks turning sceptical, and the bullet train could remain more of a political slogan than an operational reality.”

Affordability remains a critical challenge, as pricing and subsidies must strike a balance between operational viability and inclusivity. Railways Minister Ashwini Vaishnaw assures that the fare structure will be accessible. “The bullet train’s fare structure will be middle-class friendly and reasonable.”

Future projects must also contend with financing constraints. “There are restrictions in raising long-term funds from private players, as public-private partnership (PPP) models have proven unattractive for projects with such long gestation periods. Dependence on multilateral and bilateral financing also risks constraining the seamless



development of contiguous corridors,” surmises railway expert Ramakrishnan.

At the time of its launch, the MAHSR corridor was estimated to cost ₹1.08 trillion, with the Japan International Cooperation Agency (JICA) providing up to 81 per cent of the funding as a soft loan, and the remainder to be borne by the Indian and state governments. The delay has since led to a rise in project costs. “We are working on the cost escalation with the Japanese side,” confirms Vaishnaw.

As a strategic response, Indian Railways is now pursuing the indigenous development of high-speed rolling stock capable of operating at 250 km per hour on standard gauge within the next two years. This approach affirms the need for India to build self-reliant capabilities in technology, financing, and execution if HSR is to become a truly national network.

A measured approach will also help India avoid the pitfalls seen in China, where the high-speed rail network has expanded to over 50,000 km—the largest in the world—but only a handful of corridors, such as Beijing-Shanghai, Beijing-Tianjin, and Shanghai-Nanjing, are consistently profitable. These routes benefit from dense populations, strong business travel demand, and high-frequency operations. The majority of China’s corridors, particularly those serving less populated or emerging regions, operate at a loss or break even. These are often justified on grounds of long-term regional development and economic stimulus, rather than immediate financial returns.

Yet, amid these cautionary lessons, Infravision Foundation’s Chatterjee, urges focus on the bullet train’s nation-building promise. “Just as [Prime Minister Atal Bihar] Vajpayee unleashed the National Highways Development Project on the nation, we are asking today’s leadership to adopt high-speed rail as the next big transformative idea for citizens.”

▲ An estimated 170,000 metric tonnes of steel will be used in constructing India’s first bullet train corridor, according to official data.