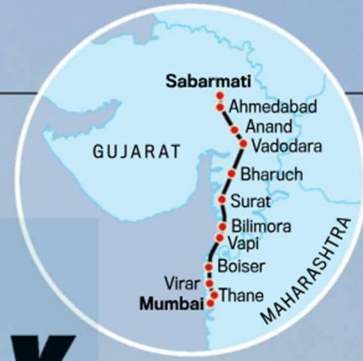


SPECIAL REPORT | **BULLET TRAIN PROJECT**



ON THE FAST TRACK, FINALLY

With 100 per cent of the land acquisition done, **India is all set to welcome its maiden bullet train**, connecting Ahmedabad and Mumbai, and change the economic landscape along the entire stretch

By Jumana Shah

There is a palpable air of excitement in central and southern Gujarat. On January 8, railways minister Ashwini Vaishnaw took to X (formerly Twitter) to announce that the National High Speed Rail Corporation Limited (NHSRCL) has completed 100 per cent land acquisition required to execute India's first bullet train project between Ahmedabad and Mumbai. The 508-kilometre high-speed rail (HSR) corridor will traverse about 350 km in



Gujarat, straight like an arrow through various villages and towns where extensive industrial and urban development is planned to take advantage of their rapid connectivity to India's commercial capital Mumbai. Besides land acquisition, NHRCL has awarded all civil contracts in Gujarat and Maharashtra (where a 156-km corridor is coming up), a major step towards reducing the rail travel time between the two terminal hubs from the current 5-7 hours to just over two hours (see *Progress Report*).

Located in the heart of the Ahmedabad-Gandhinagar urban agglomeration, massive concourses are under construction at the Sabarmati Multimodal Transport Hub—home to the terminal bullet train station in Gujarat. The NHRCL public relations officer in Ahmedabad draws up an oral vision of how these

PROJECT COST

₹ **1.08**
lakh crore

TOTAL LENGTH

508
kilometre

TOTAL STATIONS

12

concourses will turn into busy streets in four years, with commuters hopping on and off the bullet train to seamlessly catch a regular train to onward destinations, or the Ahmedabad Metro connecting to state capital Gandhinagar, or the local bus rapid transit system. Lined with premium hotels, restaurants, office spaces and shopping plazas, the hub will rival any major airport in India. In Mumbai, the terminal HSR station is being constructed underground at the upscale Bandra Kurla Complex.

Based on the Shinkansen bullet trains, first introduced in Japan in 1964, the Mumbai-Ahmedabad High Speed Rail (MAHSR) project is estimated to cost Rs 1.08 lakh crore. A soft loan extended by the Japan International Co-operation Agency (JICA) will help fund 81 per cent of the construction cost, the



CONCRETE STEPS
Concourses being built at the Sabarmati Multimodal Transport Hub

SPECIAL REPORT

BULLET TRAIN PROJECT

balance coming through NHRCL—a special purpose vehicle (SPV) floated by the Union ministry of railways (holding 50 per cent of equity), along with the state governments of Gujarat and Maharashtra (25 per cent equity each).

NHRCL plans to operate two types of services on the corridor—a rapid one with only two stoppages at Surat and Vadodara that will complete the journey in 2.07 hours, and a slower service with 10 stops that will take 2.58 hours, still much faster than the existing options (see *High-speed Travel*). The reduced travel time is expected to make Surat, Vadodara and Ahmedabad in Gujarat veritable extensions of Mumbai, facilitating comfortable day trips and, as urban planners hope, even daily commutes to ease the pressure on the congested metropolis. Each train will have 10 coaches with a total seating capacity of 690. The first batch of coaches is expected to reach India by the end of 2025, post which a 50-km trial run will take place between Surat and Bilimora in August 2026. Commercial operations

are scheduled to begin in 2027, with the plan to run bullet trains every hour throughout the day.

ACQUISITION ISSUES

An HSR line for India was first conceived in 2009. Soon after, a pre-feasibility study was initiated for the Mumbai-Ahmedabad corridor, followed by similar studies for other corridors (see *Extending the Network*). A joint feasibility study report submitted by JICA in July 2015 became the basis of the MAHSR project. If everything had gone according to plan, the bullet train would have been on the tracks by now, well in time for the 2024 Lok Sabha election. But the Covid-19 pandemic hit land acquisition, and combined with the farmers' protest in Gujarat and the change of government in Maharashtra, the process came to a grinding halt. In fact, farmers in at least two districts of

PROGRESS REPORT

With commercial operations scheduled to begin in 2027, here's how the work is progressing so far



ON TRACK
Work underway at Kalapur in Ahmedabad

- 100% land acquisition completed in Gujarat, Dadra & Nagar Haveli and Maharashtra
- All civil engineering contracts awarded in Gujarat and Maharashtra
- The laying of first RC track bed as used in Shinkansen has started in Surat and Anand
- First mountain tunnel (350m) completed in Valsad in 10 months; work on India's first undersea rail tunnel (7 km) has started in Mumbai
- First steel bridge (70m) erected across NH-53 in Surat; bridge works on six rivers completed
- Foundation work done for all eight stations in Gujarat
- Excavation work for the Mumbai station, geotech work for other three stations in Maharashtra underway

NHRCL HAS ACQUIRED 1389.5 HECTARES OF LAND FOR THE PROJECT. A SPOKESPERSON SAYS THAT AN ELEVATED VIADUCT MINIMISED THE NEED FOR LAND AND REDUCED THE OVERALL ENVIRONMENTAL IMPACT

Gujarat are still legally contesting the compensation awarded to them.

In Bharuch's Kelod village, for instance, Nipul Patel, a local BJP functionary till about two months ago, is leading a group that has refused to allow the Viksit Bharat Sankalp Yatra—a nationwide campaign to raise awareness about government schemes—enter the village. He cites the example of Bharuch's Juna Diva village, where 105 farmers have refused to take compensation even after losing their land. "The matter is now in court," says Patel, who is also an agriculturist and one of the petitioners.

The compensation was paid in accordance with the Land Acquisi-

HIGH-SPEED TRAVEL

Running at a maximum speed of 320kmph, the bullet train will significantly reduce the travel time between Ahmedabad and Mumbai

BULLET TRAIN

2.07 hrs (two stops)

2.58 hrs (all 10 stops)

**AIRPLANE**

3.10 hrs

(including the 2-hour check-in time)

**RAIL**

5-7 hrs

**CAR**

8 hrs

**BUS**

9.30 hrs



tion Act, which worked out to four times the market rate in rural areas and twice the market rate in urban areas. In Surat, Jayesh Patel, who led a successful movement for higher compensation, claims that though "50 per cent of the farmers are happy" and have used the money to construct a new house or buy a car or another piece of land to continue farming, "an equal number are still dissatisfied".

Since the bullet train's route must be straight, varying portions of farms were acquired for the project. "An elevated viaduct has minimised the need for land acquisition besides reducing the overall environmental impact of the project," says an NHRCL spokesperson. While 951.14 hectares have



“THE IMPACT OF THIS HIGH-SPEED RAIL NETWORK GOES BEYOND JUST CONNECTING PHYSICAL LOCATIONS. IT TIES DIFFERENT ECONOMIC HUBS TOGETHER, FOSTERING COLLABORATION AND GROWTH”

ASHWINI VAISHNAW
Union Minister for Railways

been acquired in Gujarat, 430.45 ha have been acquired in Maharashtra and 7.9 ha in Dadra & Nagar Haveli. Officials claim that in many places, farmers have resumed agricultural activities even after receiving compensation once the elevated viaduct was constructed.

INDUSTRIAL CLUSTERS

Even as the government sorts out such pending issues surrounding the acquisition process, an array of high-profile industrial clusters has been planned in Gujarat to maximise the economic benefits of the MAHSR corridor. For instance, the bullet train is a key sales point of GIFT City (Gujarat Industrial Finance Tec-City) in Gandhinagar, which is being projected as a greenfield extension of Mumbai. Located 23 km from the Sabarmati HSR station, it is well connected to it by road and Metro rail.

Sanand, about a 45-minute drive from the station, is being developed as an automobile, semiconductor and space manufacturing hub. The city is home to India's first plug and play industrial park, which has come up after collaboration with the Japan External Trade Organisation in 2022.

Tata Motors, which opened its Nano plant in Sanand in 2009, has last year also acquired the Ford Motors plant that had come up in 2011. MG Motors' singular manufacturing facility is 150 km away in Halol, while Honda and Maruti Suzuki's manufacturing plants in the Mandal-Bekaraji SEZ are just 64 km away. The US chipmaker Micron Technology has already been assigned land in Sanand for its maiden manufacturing facility in India with an investment of \$2.75 billion (Rs 22,875 crore). In October 2023, the Gujarat government also signed an MoU with IN-SPACe—an autonomous entity under the GoI's space department—to develop a space manufacturing cluster in the region.

Moving south, Agate Stone Industries Cluster is coming up in Anand. The unique hard stones are found in Khambhat. The unorganised industry expects to exploit a bigger market by streamlining technical support and access to buyers. In addition to the chemical processing industries in Jhagadia and Ankleshwar, central Gujarat is poised to emerge as a pharmaceutical hub with a massive 2,000-acre bulk drug park in Jambusar. The park is expected to draw an investment of Rs 8,000 crore and house about 400 companies, focused on manufacturing key starting materials (KSMs) and active pharmaceutical ingredients (APIs) to reduce dependence on imports.

Surat is already a hub of diamond polishing and trading. Inaugurated in December 2023, the Surat Diamond Bourse is spread over 6.7 million sq. feet and pegged as the world's largest office space. It is strategically located just 25 km from the bullet train station at Kadodara with express road connectivity. A food processing cluster is also in the works at Navsari, barely 33 km from Kadodara.

In Vadodara, the European avia-

EXTENDING THE NETWORK

- The National Rail Plan envisions enhancing India's high-speed rail (HSR) network to connect all important cities
- As part of the National Infrastructure Pipeline, seven HSR corridors have been identified
- The plan is to make them operational between 2031 and 2051 in a phased manner
- For now, the Ministry of Railways has asked the National High Speed Rail Corporation Limited to prepare their detailed project reports



1. Delhi-Chandigarh-Ludhiana-Jalandhar-Amritsar **476 km**
2. Delhi-Lucknow-Varanasi **813 km**
3. Varanasi-Patna-Howrah **752 km**
4. Delhi-Jaipur-Udaipur-Ahmedabad **872 km**
5. Nagpur-Nashik-Mumbai **767 km**
6. Mumbai-Pune-Hyderabad **671 km**
7. Chennai-Bengaluru-Mysuru **464 km**

tion major Airbus is in the final stages of setting up an aircraft manufacturing unit in collaboration with Tata Advanced Systems. Even the Canadian giant Bombardier has a railway car manufacturing and assembly unit at Savli in Vadodara. "Engineering and service industries are coming up on the stretch," says Pathik Patwari, the previous president of the Gujarat Chamber of Commerce and Industry. "We expect Vadodara to emerge as a vibrant aviation and rail cart manufacturing hub. Combined with the Delhi-Mumbai Industrial Corridor (DMIC) that passes through the region, development of the logistics manufacturing sector is also on the cards."

URBAN DEVELOPMENT

The DMIC runs almost parallel to the bullet train line, paving the way for planned urban pockets in the green countryside. In fact, urban development seems to be on steroids along the MAHSR's entire 352 km stretch in Gujarat. Only three of the eight stations in the state—Sabarmati, Ahmedabad and Vadodara—are located within a city. The Anand station is located in a village (Uttarsanda), Bharuch and Surat stations are on the outskirts of the two cities, and Bilimora and Vapi stations are greenfield sites. These HSR sta-



“WE CAN EXPECT BUSINESS, HIGH-END RETAIL, RESIDENTIAL, TOURISM, HOSPITALITY AND INSTITUTIONAL DEVELOPMENT ALONG THE INFLUENCE AREAS OF ALL 12 STATIONS. NEW SATELLITE CITIES MAY DEVELOP IN GREENFIELD AREAS”

HARPAL DAVE
Additional Chief Town
Planner, Gujarat

tions will have a significant impact on their surroundings, referred to as 'station influence areas'.

In October 2022, the GoI signed a technical cooperation agreement with JICA to handhold Indian urban planners for five years to develop

these areas that extend up to a radius of two kilometres. Arterial roads are being developed for a further 5-7 kilometres for seamless mobility. Pedestrian streets and public spaces will also come up in a phased manner.

"Development of two station influence areas in Gujarat—Sabarmati and Surat—and two in Maharashtra—Boisar and Thane—are being monitored under this agreement," says Harpal Dave, additional chief town planner, Gujarat. "We will develop the remaining ones on similar lines." Modalities for at least one medical tourism hub and a premier education township are also being worked out. Dave envisions a seamless economic corridor connecting Mumbai, Surat and Ahmedabad, which would require "special urban planning". "We can expect business, high-end retail, residential, tourism, hospitality and institutional development along the influence areas of all 12 stations," he says. "New satellite cities may develop in greenfield areas. This transformation will happen gradually."

As the HSR stations and viaducts are now finally taking shape along the route, apprehensions about the project are giving way to excitement, even though it's still a long way before India's maiden bullet train zips from Ahmedabad to Mumbai. ■