# Four major projects shaping the future of rail in India.

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The way that India travels is about to change with news this week of two exciting rail projects which are about to get underway; both the Lucknow metro and the next generation of maglev trains will be in operation in less than a decade. There are 26

cities in India proposing to build high-capacity metro systems, and to help you keep up to date on the latest developments, SmartRail World today brings you a list of the latest projects making the biggest headlines. Slow services and dangerous overcrowding are making India's railways the largest, yet most precarious network on the planet spanning over 67,312km with 7,112 stations. It may shock you to know that in 2015 it was reported that around 15,000 people died on India's rail network. But with stretched funding, organisational challenges and kilometres of ageing track to make safe, it is now time to reinvent the future of India's railways. Now, they are becoming a priority for ministers who realise that upgrading these tracks is essential to deal with the country's overcrowding issues and health and safety standards. SmartRail World have researched into the the future of India's railways and what passengers can expect over the next decade.

# Lucknow Metro

The Lucknow Metro development has successfully undergone its first vigorous three month trial and has been confirmed that it will be open to the public on March 26. Work started on the Mass Rapid Transit System in 2014. This news came after the growing urban population combined with congested roads led to the decision made by Chief Minister Akhilesh Yadav. In his haste to begin the project, many had questioned his real motives for doing so if it was not a political one. Addressing the public, Akhilesh said that the "Metro was not in our manifesto but we initiated the project. The work for the same has also been started in Ghaziabad, between Greater Nodia and Noida, and also in Kanpur. If we come to power again, we will start work in Varanasi too," as reported by the *Indian Express*. Either way, the transit will be built to cater for the Uttar Pradesh region. This will be the most expensive transport system in the state of Uttar costing ₹6,928 crore ($1 billion). Akhilesh said it was a

challenge to start the project on time, and added that they have “set an example before the country.”

The 23km track will have a North-South corridor serving 21 stations and eight of these will be elevated. 3.5 km underground stretch connecting the Hazratganj, Sachivalaya and Hussainganj Metro Stations.

# Mumbai Metro

The Mumbai Metro has been one of the most talked about projects to impact the future of India’s rails. Its construction could dramatically improve the most populous city in India. 88% of the city rely on public transport in their commute to work. The current infrastructure connecting the city is the Mumbai Suburban Railway which is the oldest in Asia and founded in 1867. It has the highest passenger density in the world with 6.3 million using the service daily, amounting to more than half of the daily capacity of India's Railways. Deliberations on this have been part of the government’s agenda since 2004. It was finally announced that this year the project would start to be constructed with an expected completion date of 2020. This will become the city’s first underground metro corridor to connect Colaba with Seepz via Bandra. The total cost is predicted to be ₹23,136 crore.


The project's master plan has been planned in three phases. Phase I covers a total distance of 62.68km. It includes the 11.07km Versova-Andheri-Ghatkopar route, the 20km Colaba-Bandra section and 31.8km Charkop-Bandra-Mankhurd route. Phase II has been planned to cover the 7.5km Charkop-Dahisar route, the 12.5km Ghatkopar-Mulund route and 19.5km BKC-Kanjurmarg via Mumbai Airport sections. Phase II will be executed in 2012-2017. Phase III will include the development of the 18km Andheri East-Dahisar East route, the 21.8km Flora Fountain and Ghatkopar and an underground section route. Phase III will be executed in 2016-2021. When it opens, the new system will slash journey times on the 11km east-west corridor from 90 minutes to just 21, crossing densely populated areas and major industrial locations.

# India’s first bullet train

This next proposal has also caused some controversy as the final cost of the project is expected to amount to three times the size of India’s annual health budget.

However, there is no doubt that the infamous high-speed bullet train is expected to revolutionise passenger journeys in India by 2023. Reaching speeds of up to 350kmh – whilst not as impressive as developments China and Japan are working on, will still travel between Mumbai and Ahmedabad in just two hours. The line also involves some complex engineering as a 21km tunnel will need to be built under the sea.

Plans estimate that this will cost around ₹97, 636 crore with 81% of the funding being provided from a Japanese loan. The estimate includes possible cost escalation, interest during construction and import duties. As part of this agreement, rolling stock and other equipment like signalling and power systems will be imported from Japan. Construction work is likely to begin by the end of 2018.

One key aspect about the train is that it will be the cheapest high-speed rail in operation designed to be cost effective for common people to be able to buy a ticket. The semi-high speed routes are planned to connect: Delhi-Chandigarh, Chennai-Bengaluru-Mysore, Delhi-Kanpur, Nagpur-Bilaspur, Mumbai-Goa, Mumbai-Ahmedabad, Chennai-Hyderabad and Nagpur-Secunderabd.

# Maglev trains

News out this week however, sets to challenge the speeds of even high-speed rail in India with the latest Maglev proposal. The railway ministry has already taken steps forward to having these implemented within the next three years. A trial track is due to be built to start the testing process. Additionally, Indian Railways have requested Rail India Technical and Economic Service to prepare a detailed project report in the next six months.

Maglev technology whilst not a new idea is yet to be used for commercial operation. The train uses electrically charged magnets which pull the train from the front and push it from behind. They are then controlled by alternating currents which propel the train forward. Hovering 10cm above the tracks, the maglev does not need to be fitted with wheels or traditional rolling stock technology. As a result, this design allows it to achieve speeds of up to 500 km/h.

A railway board official said the mechanical wing of the railways has sent a formal proposal to the finance department to work out the expenditure on the project. Since, the project would require huge investment, the government has no option but to develop the same on PPP model. An expression of interest was issued by the ministry to which six private companies including two global firms have responded so far. Top sources in railway ministry said once the project estimate is prepared, the railways may offer its vacant land for the construction purpose and also bear the cost partially. Since the Maglev train system will be entirely different from the existing railway network, the operation of these trains could be handed over to private agency. No discussions have yet been made to plan the route.