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RAILWAYS & METROS ON REVIVAL TRACK

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REVIVAL on FAST TRACK

The Indian Railway and Metro rail infrastructure is at the cusp of a complete turnaround with the modernization and expansion activities have taken pace recently. **Construction Times** finds out the latest developments happening in the Railways and Metros segment and how these developments are giving a facelift to the sector.

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REVIVAL_{on} FAST TRACK

India's Railway and Metro rail infrastructure is at the cusp of a complete turnaround with the modernization and expansion activities have taken pace recently. **Construction Times** finds out the latest developments happening in the Railways and Metros segment and how these developments are giving a facelift to the sector.

Compared to roads, Railways is more cost-effective and environmentally sustainable mode of transportation for people to travel and freight movement. However, over the years, while the road transportation network has significantly improved in the country, the growth of railway infrastructure was comparatively very low. It is only the past few years after the development of dedicated freight corridors that the rail freight infrastructure started getting a new lease of life. Electrification of railway lines and introduction of semi high-speed and high-speed railway services have provided further momentum to India's railway sector. In the Metro segment, there are many new projects are coming up in tier-2 cities apart from expansion of metro networks in tier-1 cities. All these are bringing in new revolutions in the railways and metro rail infrastructure in the country.

NEW DEVELOPMENTS IN RAILWAYS

Indian Railways (IR) is the second largest passenger railway and the fourth largest freight railway in the world measured by traffic volume. IR is the fourth-largest rail network in the world having transported 1.2 billion tons of freight in the fiscal year ending March 2020. Yet, 71 percent of India's freight is transported by road and only 17 percent by rail. Capacity constraints of IR have limited the volumes and reduced the speed and reliability of shipments. As a result, IR has been losing market share to trucks over the years; in 2017-18, its market share was 32 percent, down from 52 percent a decade earlier.

Rail infrastructure development is being prioritised under the National Infrastructure Pipeline (NIP) 2020-2025. The NIP has identified 682 investment opportunities for private sector and including in the form of Public Private Partnerships (PPP) across three railway subsectors (track, rolling stock, and terminals), with investment needs of US\$224.7 billion over the next five years, including: (i) rail track: 609 projects, US\$174.9 billion; (ii) rolling stock, 40 projects, US\$47.3 billion; and (iii) terminals, 33 projects, US\$2.5 billion.

Abhishek Gupta, Sector Head & Senior Vice President, ICRA, highlights, "Over the medium term,



ABHISHEK GUPTA
Sector Head & Senior
Vice President, ICRA

the Railways have a mission to achieve 3,000 MT by 2027. To achieve this, sizeable investments towards railway infrastructure capacity enhancement is required. An investment of about Rs. 15 trillion is planned during 2021-2031, which would be primarily towards track

infrastructure, terminals, and rolling stock. Hence, this is likely to provide sizeable opportunity to the players involved in railway infrastructure construction, rolling stock and railway technology."

IMPROVING RAIL LOGISTICS, REDUCING EMISSION

Road freight is the largest contributor to greenhouse gas (GHG) emissions, accounting for about 95 percent of emissions of the freight sector. Trucks also accounted for about 12.3 percent of road accidents and 15.8 percent of total road transport-related deaths in 2018. Rail emits about one-fifth of trucks' GHG emissions and with IR planning to become a net-zero carbon emitter by 2030, it has the potential to eliminate 7.5 million tons of carbon dioxide and other greenhouse gases each year.

Government of India (GoI) has launched several plans which target capacity creation in railways and its integration with the logistics ecosystem through various initiatives such as the DFCs, rail electrification, and the creation of Multimodal Logistics Parks. Other GoI initiatives target the integration of railways in the logistics network. The National Industrial Corridor Development Program, the Maritime Vision 2030, the Sagarmala program, the Bharatmala Pariyojana, and the Draft National Logistics Policy, uniformly emphasize the need for enhancing multimodal transport and terminals, improving rail links with ports and inland gateways, and strengthening first/last mile connectivity to rail.

Aiming at modernization of rail logistics, the World Bank's Board of Executive Directors approved a \$245 million loan to support India's efforts to modernize rail freight and logistics infrastructure. The Rail Logistics project will help India shift more traffic from road to rail, making transport—both freight and passenger—more efficient and, reduce millions of tons of greenhouse gas emissions each year. The project will also incentivize more private sector investment in the railway sector. The project focuses on harnessing commercial financing, tapping private sector participation, and developing customer-oriented approach.

The project will support reduction in carbon emissions and in developing climate resilient



infrastructure. Eastern Dedicated Freight corridor (EDFC) can potentially reduce GHG emissions on freight by nearly half by 2052 by facilitating modal shift of cargo from road to rail, moving away from diesel rail to electric rail lines for cargo transport, as well as by reducing fuel consumption and enhancing the operating efficiency of freight rail.

NEED FOR MORE WAGONS

According to **Vivek Lohia, Managing Director, Jupiter Wagons Ltd**, as per the National Rail Plan 2030, Indian Railways plans to increase the share of railways in overall logistics from 27% to 45%. “To



VIVEK LOHIA
Managing Director
Jupiter Wagons Ltd

achieve that, as per their estimates, they will require around 5.44 lakh wagons by 2031,” he adds.

According to a recent ICRA report, with the commissioning of dedicated freight corridors, along with a target to increase the share of freight transport through the railways, the Indian Railways plans to add 90,000 wagons. This will provide ample orders for the wagon manufacturers, resulting in an improvement in the overall capacity utilisation to ~70-80% in the medium term from a modest sub 40% in the past. The combined manufacturing capacity of rail wagons in India is estimated at 35,000-40,000 units per annum, which has faced challenges related to the under-utilisation of capacities in the past.

INDIAN RAILWAYS: NEW PROJECTS/OPPORTUNITIES
High Speed Rail program (Upgrading existing lines to increase speed) with GRIDE, MRIDC, K-Rail.
Railway stations development with focused infrastructures
Provision of CBTC (signalling program) by MRVC & Metro Kolkata
Upgradation of 25 KVA electric lines
NCRTC/RRTS new lines & upcoming semi high-speed projects (Del-Alwar) & (Del-Pan)
Newer Dedicated Freight Corridor: EDFC Dankuni-Somnagar line
New opportunities with RVNL
Bangladesh rail upgradation/modernization of existing network with new lines.
<i>Source: Egis India</i>



MODERNISING RAIL PASSENGER SERVICES

In order to improve the passenger travel experience and attract more people to use Railways as a viable alternative to long distance travel, the government has introduced semi high-speed train services (Vande Bharat Express). The construction of India’s first high-speed rail corridor (Ahmedab-Mumbai) is underway. Once this is operational, the government has plans to implement similar corridors between other major cities across the country.

Gol plans to launch 75 of the Vande Bharat Express trains by August 2023 to connect all major industrial and business cities. The trains have a top speed of 160 km per hr. The fifth Vande Bharat Express of the country and the first such train in South India was flagged off by Prime Minister Narendra Modi on November 11, 2022. This initiative will provide a boost to connectivity and commercial activities by enhancing the ease of living in southern states. The other Vande Bharat Express services are: Mumbai-Ahmedabad, Una-New Delhi, New Delhi-Varanasi, and New Delhi-Shri Mata Vaishno Devi Katra.

RECENT DEVELOPMENTS IN METRO RAIL

As per the latest reports, India has become the fifth-largest metro rail network in the world. Speaking at the 15th Urban Mobility India (UMI) Conference and Expo 2022 in Kochi, Union Minister Hardeep Singh Puri revealed that around 810 km of metro line are operational in 20 cities in the country while more than 980 km of metro network and RRTS is currently under construction in 27 cities. He also said that India will soon overtake Japan and South Korea to become the third-largest network.



SVR SRINIVAS, IAS
Maha Mumbai Metro
Operation Corporation
Limited (MMMOCL)

Speaking about the advantages of metro system, **SVR Srinivas, IAS, Chairman, Maha Mumbai Metro Operation Corporation Limited (MMMOCL)**, says, "The Metro rail signifies sustainable development in developing the urban transport system in the metropolis and its contribution to shaping sustainable growth in urban areas. The Metro rail system in cities contributes to shaping sustainable urban growth."

MRTS (METRO & LRT): NEW PROJECTS/OPPORTUNITIES
BMRC Phase 2
DMRC Phase 4
MMRDA new Lines
Dhaka Metro new lines
Kochi Metro Phase 2
GMRC Metro Lite
Maha Metro, Metro Lite (Nahsik , Thane)
DMRC Metro Lite
<i>Source: Egis India</i>

On the future of metro segment in India, Gupta says, "The Metro Rail network is likely to witness 2.7 times expansion in the next five years. Typically, the average Metro Rail development cost is estimated at Rs. 3 billion/km for the elevated Metro, while it could be significantly higher in the case of an underground Metro network. Given the large size of the Metro projects planned, this is likely to offer sizeable opportunities for construction companies over the next five years."

LOOKING FORWARD

According to **Kaushal Kodesia, Executive Director – Railways, KEC International Ltd**, redevelopment of railway stations has been a major



KAUSHAL KODESIA
Executive Director –
Railways
KEC International Ltd

focus area of the government. "This will not only have a multiplier effect in the economy with increased job creation but also result in improved economic growth. Furthermore, railway station development forms the



major chunk of asset monetisation plans of Indian Railways. Construction of station infrastructure and expansion of railway network will bring a significant overhaul on the railway infrastructure," he adds.

According to Gupta, improving on the pace of railway infrastructure development will be a key challenge as railway projects have witnessed significant delays and cost overrun in the past. Hence, prioritising and completing critical projects early would be important to improve efficiency.

Going forward, there will be more space for adoption of new technologies into the system. **Sunil Srivastava, Managing Director, Balaji Railroad Systems** says, "There are opportunities for newer




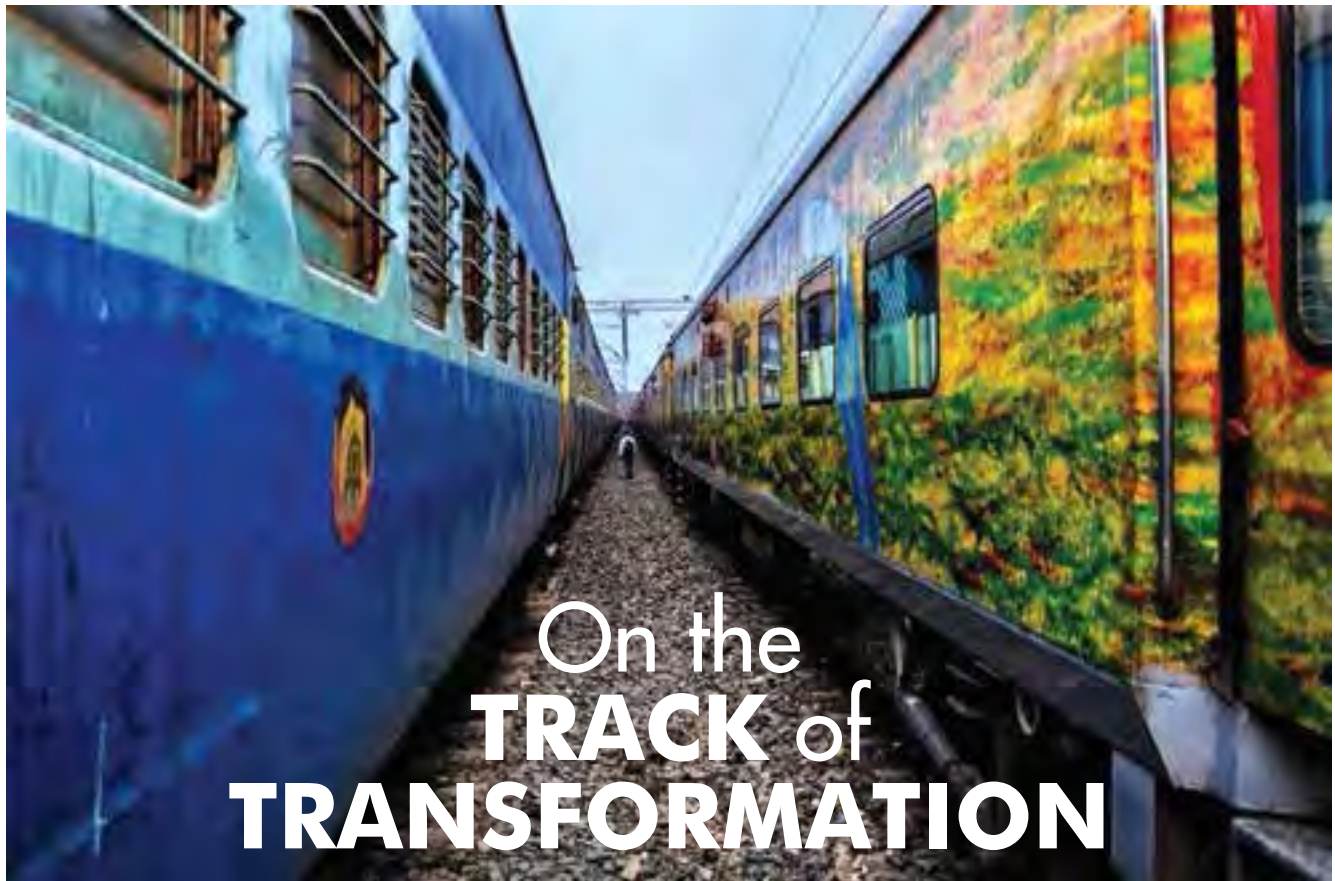
SUNIL SRIVASTAVA
Managing Director
Balaji Railroad Systems

technologies but this is also a challenge as the authorities need to look beyond the conventional technologies. Going forward, I see a lot of opportunities for operations & maintenance of metro systems as the Metro companies would like to run a lean organization and will hence look to outsource this major activity."



SANDEEP GULATI
Regional CEO-South Asia
and MD, Egis India

Sandeep Gulati, Regional CEO-South Asia and MD, Egis India concludes, "Metro in India will continue to become a dominant mode of transport in future. Additionally, other modes of urban transport like rapid rail, light rail etc. are also gaining traction." 



On the TRACK of TRANSFORMATION

The Indian Railways moves a staggering 8.1 billion passengers and 1.2 billion ton of freight across the country on an annual basis. Conscious of its importance in laying the foundations of 'New India', the government has launched and accelerated rail infrastructure initiatives to revamp the sector. To fuel this juggernaut on wheels, the Government has been allocating large resources since 2014. The budgeted capex for 2022 stands at ~US\$ 32 billion, which is the highest- ever allocation. Further, the Indian Railways' National Rail Plan – 2030 is a planned and integrated roadmap to building a future-ready rail system, focusing on capacity augmentation, creating world-class passenger facilities/infrastructure, increasing safety and efficiency, and reducing its carbon footprint.

INCREASING FREIGHT TRANSPORTATION

In order to make Indian goods globally competitive and improve ease of living for the common man, the Government of India is on a mission to reduce the cost of logistics to GDP to single digits within the current decade. To help achieve this target, the Indian Railways is targeting to increase its modal share in freight transportation from 27% to 45% by 2030.

The Railways is working towards achieving this target through a multi-pronged approach. In terms

of infrastructure creation, the Indian Railways is working on the creation of Dedicated Freight Corridors which will connect the manufacturing and consumption hubs to the ports for both export and import purposes. These corridors will have double stacked trains with average speeds of ~100 kmph and will significantly increase the operational capabilities of the Indian Railways in terms of freight movement. The first two – the Eastern and Western freight corridors are expected to be commissioned by 2023 and could potentially enhance the profitability of the Railways' freight business through better services to customers.

Additionally, the Indian Railways is working on policies and measures to attract freight from nontraditional sources such as e-commerce, Parcel Movement, Automobile etc. These sources are meant to supplement the traditional users of rail freight such as coal, iron, agricultural commodities etc. The policies/initiatives from the Railways to attract freight from these sources are included but not limited to the creation of a virtual aggregator platform for movement of parcels, and an amendment to the dangerous goods policy. To ensure that adequate number of wagons is available to transport freight, the IR is inviting bids for the supply of over 90,000 wagons in the next three years which is twice the number of wagons the IR used to induct earlier.



Karan Sethi
Principal Investment Specialist
Invest India

BOOSTING PASSENGER TRAVEL

Indian Railways is also boosting the speed of passenger travel by upgrading its tracks and introducing semi high-speed trains. The bullet train/high-speed rail is expected to reduce travel time by ~60 per cent, and the first one between Mumbai and Ahmedabad is currently under implementation. In order to offer world-class passenger services, the Indian Railways flagged off its first Vande Bharat train in February 2019.

The government plans to induct 400 of these trains in the next three years with 75 trains to be inducted by the 15th of August 2023. The improved Vande Bharat 2.0 train was flagged off by the PM in September 2022. These trains have a maximum speed of ~180 kmph and are equipped with the indigenously developed KAVACH system (Train Collision Avoidance System) for enhanced safety in operations.

To enrich passenger experience at railway stations while increasing the Railways' non-fare box revenue, marquee stations have been identified for redevelopment into hubs for transit-oriented development, through Engineering, Procurement and Construction (EPC) route and Public-Private-Partnership (PPP) route. As a part of this program, planning/work on the redevelopment of 199 stations is in progress. Additionally, the Cabinet has sanctioned investment of ~US\$ 1.2 billion for three marquee stations, namely New Delhi, Chhatrapati Shivaji Maharaj Terminus (CSMT), Mumbai and Ahmedabad Railway Stations, which will be developed through EPC. Gandhinagar and Habibganj Railway Stations were inaugurated in July 2021 and November 2021 respectively.



Govind Puri
Senior Investment Specialist
Invest India

PRIORITY ON SAFETY

The IR has also laid a strong emphasis on creating a modern and safe railway network.


The elimination of all unmanned level crossings in 2019 resulted in the Indian Railway's longest period of zero passenger fatality. In relation to this, it is also amid overhauling its age-old signaling system in favour of internationally accepted automatic train protection technologies.

Further, in times of the Covid-19 crisis, Indian Railways truly acted as a lifeline to the nation by running special trains to ferry migrant workers, transport essentials such as oxygen, and by converting some of its infrastructure into medical centers. With maximum trains to Uttar Pradesh and Bihar, the Shramik Express carried 63.15 lakh passengers to 23 states through 4,621 trips between 1 May and 31 August 2020.

GOING GREEN

With India's ambitious targets of achieving net zero carbon emissions, Indian Railways is also playing its part in going green. It is set to become the world's largest fully electrified railway network by 2023, and a 'Green Railway' (net zero carbon emitter) by 2030. To achieve this, it plans to set up 20 GW of solar power capacity on its vacant land and railway station/real estate rooftops by 2030, for which several projects have already been commissioned.

ON TOTAL TRANSFORMATION

It is noteworthy that the Indian Railways is undergoing a holistic transformation with an aim to augment and improve its entire ecosystem including passenger travel, freight, and infrastructure. Further, it is also changing the way it designs and implements the development of its network, moving from a need-based model of development, to one where it is creating a world class infrastructure to meet the growing needs of New India. 

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The Metro Rail network is likely to witness 2.7 times expansion in the next five years.

ABHISHEK GUPTA

Sector Head & Senior Vice President, ICRA Limited

How do you assess the current Indian rail and Metro Rail market scenario?

Railways: Indian railway network is amongst the largest rail networks in the world and carrying around 1,418 million tonne (MT) of cargo in FY2022. However, the growth in cargo handled by Indian Railways had been growing at a modest CAGR of 4.3% between FY2015 to FY2022 as the Railways have lost market share to other mode of freight transport. However, the Ministry of Railways (MoR) has embarked upon a long-term plan called the National Rail Plan (NRP), which targets Railways to carry 3,600 MT by 2030-31. Over the medium term, the Railways have a mission to achieve 3,000 MT by 2027. To achieve this, sizeable investments towards railway infrastructure capacity enhancement is required. An investment of about Rs. 15 trillion is planned during 2021-2031, which would be primarily towards track infrastructure, terminals, and rolling stock. Hence, this is likely to provide sizeable opportunity to the players involved in railway infrastructure construction, rolling stock and railway technology.

Metro Rail: In India, 15 cities have an operational Metro network of about 746 km (many of which are undertaking network expansion), while another seven cities of about 640 km have under-implementation Metro projects. This apart, 1,400 km of Metro Rail projects worth Rs. 2 trillion are in the approval/proposal stage of which a 352-km new Metro network has been approved, with the balance being in the proposal stage. The Metro Rail network is likely to witness 2.7 times expansion in the next five years. Typically, the average Metro Rail development cost is estimated at Rs. 3 billion/km for the elevated Metro, while it could be significantly higher in the case of an underground Metro network. Given the large size of the Metro projects planned, this is likely to offer sizeable opportunities for construction companies over the next five years.

The Indian Railways is planning to spend more than Rs one trillion on developing and procuring assets. How far do you think this will help Railways to improve its performance and operational efficiency?

Capex is budgeted to increase to Rs. 2.46 lakh crore in FY2023BE from Rs. 2.15 lakh crore in FY2022 (RE). Core track infrastructure related capex (doubling of lines, new line construction, etc.), and rolling stock procurement are the largest components of total capex by MoR. While this is sizeable investment by the Railways and will help in reducing the capacity constraints, the impact on Railways freight share and operational efficiency is likely to be gradual. The Railways network has lagged due to prolonged under-investment in the past decades leading to capacity constraints, which eventually impacts the service quality – speed and reliability. Hence, the capex by the Indian Railway is expected to continue



over the long term to increase the capacity and upgrade railway infrastructure. Higher capex in turn is likely to keep the operating ratio of Railways under pressure. The operating ratio weakened from 97.4% in FY2021 to ~98.9% in FY2022, though it is budgeted to improve to 97% in FY2023, with recovery in passenger and freight traffic. The freight share of the Railways is also expected to increase with the operationalisation of the two dedicated freight corridors (EDFC and WDFC).

The Indian logistics industry is too dependent on road transportation while the Railways provide a better and greener alternative. What opportunities do you foresee for the Railways in freight movement and logistics?


While the Indian logistics market has grown significantly since independence – from ~90 MT in 1950s to ~5,000 MT currently, railway cargo has grown at a slower pace from ~73 MT to 1,418 MT, and railways' share has fallen from ~85% in 1950s to ~28%. Road transport has gained dominant share during this period, supported by an improved national highway network. As freight movement by the Railways is relatively efficient and has lesser CO2 emission, the focus is on upgrading the rail network to increase its modal share. This can also help reduce the logistics cost for the country.

Given this context, the Indian Railways has been undertaking significant investment towards

capacity improvement, which is expected to support the increase in their share of freight. Besides improving the rail infrastructure and wagon quality, operationalisation of the two DFCs will also help in achieving it. Under the PM GatiShakti initiative also the priority is on completing critical railway projects by FY2025, which can help decongest the rail network by 51%. This will provide significant boost to the railway freight movement and improve its share in logistics.

What could be the key challenges in the revival of railway infrastructure? What is the way forward?

Improving on the pace of railway infrastructure development will be a key challenge as railway projects have witnessed significant delays and cost overrun in the past. Hence, prioritising and completing critical projects early would be important to improve efficiency. Attracting private players through public private partnership in railway projects can also help in faster infrastructure development, though thus far there has been relatively limited success with such projects.

Besides, gaining freight share from trucks will be challenging unless the Railways is able to reduce wait time, and improve efficiency and reliability of transportation. Last mile connectivity could still remain in favour of road transport but for bulk goods to be transported over long haul, the Railways can gain share. 

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We are targeting various opportunities in Dedicated Freight Corridor and bullet train projects.

KAUSHAL KODESIA

Executive Director – Railways, KEC International Ltd

How do you look at the current scenario of Indian Railways? What are the key developments happening?

Indian Railways (IR) has witnessed significant progress in the last few years. Capex allocation of IR has grown substantially by about five times - from Rs 50,000 crore in 2014-15 to Rs 2.45 lakh crore in 2022-23. Significant capex is going towards expansion and modernization of the IR network. Railway infrastructure will see an investment of Rs 50 lakh crore during 2018-2030. In the recent years, works under Mission Raftaar (Speed upgradation project of IR) such as 2x25 kV overhead electrification, traction substation and Kavach are ongoing at a considerable pace. IR's Mission 100% Electrification has also received a major boost over time. It is heartening to note that IR has completed electrification of almost 81% of total broad gauge network till 30th September 2022.

Capacity augmentation works are being taken up on a priority basis. In the current fiscal, over 1,350 track kilometres (TKM) of new lines, gauge conversion and multi tracking projects have been

completed across the country. Further, IR's Mission 3000 MT is expected to expedite the pace of capacity enhancement works in the next five years.

In pursuance of Prime Minister's vision of 'Gati Shakti' and the Ministry of Railways' 'Gati Shakti Multi-Modal Cargo Terminal' (GCT) policy launched in December 2021, Gati Shakti Cargo Terminals are being developed for handling cargos of railways. Recent cabinet approval of the policy for long-term leasing of railway land for the PM Gati Shakti programme has been a welcome step. So far, 15 GCTs have been commissioned and around 96 more locations have been provisionally identified for development of GCTs.

Indian Railways is planning to spend more than Rs 1 trillion on developing and procuring assets. What opportunities do you look at for your company?

As part of the government's infrastructure push, the Indian Railways is planning a significant amount on developing and procuring assets. The national transporter is planning to procure 90,000 wagons over the next three fiscal years. Being an EPC contractor, we do not see much opportunity in this area.

In spite of the vast railway network, Indian Railways still lag behind in operational efficiency. What steps are needed to improve the efficiency in terms of modernizing railway infrastructure?

Several steps like adoption of latest technologies, partnership with relevant stakeholders, time-bound execution of projects, innovative financing methods, etc. can contribute towards improvement of IR's operational efficiency. In order to improve operational

Kendrapara to Paradeep new railway line project, Odisha.





Kharagpur third line project, West Bengal.

efficiency, IR launched a new innovation policy called StartUps for Railways which seeks to leverage new technologies developed by local entrepreneurs. This is a step in the right direction.

IR is making significant strides towards upgrading its rail network, operations and systems using Big Data, IoT and AI. Some of the major areas in which IR is trying to automate through data-driven decision making using AI are train scheduling, controlling the speed profiles of trains, asset management, etc.

Government has taken up various initiatives of revival and modernization of railway stations, railway lines and supporting infrastructure. How far this will support the overall railway infrastructure?

Redevelopment of railway stations has been a major focus area of the government. This will not only have a multiplier effect in the economy with increased job creation but also result in improved economic growth. Furthermore, railway station development forms the major chunk of asset monetisation plans of Indian Railways.

Construction of station infrastructure and expansion of railway network will bring a significant overhaul on the railway infrastructure.

Over 500 km of metro rail network has been constructed in the past 8 years and work for another 1,000 km network is underway in the country, according to the PM's recent statement. How are you looking at this as an opportunity for the company?

Given the government's focus on infrastructure development, the metro rail network is expected to witness 2.7 times expansion in the next five years. Typically, civil construction and systems work account for ~45% and ~20% of the overall project cost. Given the large size of the metro projects, this is likely to offer huge opportunities for construction companies in the coming years.

With our well-diversified portfolio of services in civil works as well as technology-intensive areas of urban infrastructure, we are well-placed to tap into a wide range of opportunities arising in the urban transport sector in the coming years.



Viaduct and ballastless tracks at Kochi Metro Rail project.

We have successfully diversified and deepened our presence in the metro rail business in India across all technology-enabled areas – overhead electrification, power supply systems, third rail, ballast less tracks, elevated viaducts, stations and depot-cum-workshops.

Which are the ongoing railway and metro projects the company involved with? What are the company's future plans in the railway and metro space?

We are currently executing several railway projects in areas of overhead electrification, doubling and tripling of tracks and new railway lines, civil infrastructure works such as road over bridge, bridges, tunnels, stations, and platforms, and establishing signalling & telecommunication systems and traction substations. We have widened our presence in mainline segments such as speed upgradation, port connectivity, tunnel ventilation and railway siding. We are currently executing 65% of 2x25 kV OHE projects under Mission Raftaar.

In metros, we are implementing about 20 metro rail/regional rail projects valued at over Rs 7,000 crore. We are undertaking projects from reputed clients like Delhi Metro Rail Corporation (DMRC), Chennai Metro Rail Limited (CMRL), Kochi Metro Rail Limited (KMRL), National Capital Region Transport Corporation (NCRTC), Madhya Pradesh Metro Rail Corporation (MPMRC), and Rail Vikas Nigam Limited for Kolkata metro works.

Going forward, we are targeting various opportunities in Dedicated Freight Corridor and bullet train projects. We are also targeting international markets by leveraging on the global strengths and experience of our T&D business. 

Given the government's focus on infrastructure development, the metro rail network is expected to witness 2.7 times expansion in the next five years.



Our order book is good enough to cover our capacity for the next two years.

VIVEK LOHIA

Managing Director, Jupiter Wagons Ltd

How do you assess the current market scenario of Indian Railways? What are the key developments happening?

The Indian rail network is spread across 67,386 km making it the largest in Asia and the fourth-largest in the world. Under the solitary management of Indian Railways, it comprises 13,169 passenger trains and 8,479 freight trains in operations from 7,349 stations. The gross revenue of Indian Railways for FY-22 (until June 2021) stood at Rs 39,655.25 crores (US\$ 5.34 billion).

The push on infrastructure by the government with schemes like PM Gati Shakti is expected to increase the cargo handling capacity of railways to 1,600 MT by FY25, thus accelerating the construction of two dedicated freight corridors. Even metro works have picked up and we can see India having a top-notch multi-modal transport hub in the coming years.

The Indian Railways has also unveiled a National Rail Plan (NRP) for India – 2030 which aims to create a 'future ready' railway system by 2030 which looks to create capacity ahead of demand and cater to future growth in demand right up to 2050.

Other projects the railways is undertaking include improving the infrastructure and the quality of services through 100% electrification, upgradation of existing lines with advanced facilities, upgradation of railway stations, and developing a large high-speed train network interconnecting major cities in India.

The wagon procurement plans from the domestic market and another plan for about 100,000 wagons to be procured from internationally acclaimed wagon manufacturers with new and cost-efficient designs. As a result, Jupiter Wagons Limited has mobilized their foreign partner from Europe to contribute in due conjunction with the highest offices of the

Indian Railways. Further to the efforts, super-fast bogie technology enabled with self-diagnostics to detect defects is proposed and this is perceived as the top priorities project of the Indian Railways.

So, it is a huge opportunity that we are looking at.

What opportunities do you foresee for your products and solutions in the development initiatives of Indian Railways?

Indian Railways is an assets-heavy entity and has already adopted 3,000 million tonnes of freight business by the year 2027. This has manifold implications, one of them being procurement of more and more freight wagons. Indian Railway has already planned for procurement of about 75,000 wagons in three years time starting from 2021 and which exceeds an all-time average of about 9,000 to 10,000 wagons per year. This has imparted a high inspirational factor on each wagon builder to increase and improve upon the annual wagon manufacturing capacity. In tune with this demand, Jupiter has raised this capacity to 8,000 wagons annually and has plans to further increase. This has cascading effects on the steel manufacturers of the country who will be required to correspondingly improve the production of steel to be able to take on this rate of demand.

The Niti Aayog Mission 2030 document has already explained that Indian Railways need to carry 40-45% share of the national domestic freight on economic and environmental considerations. We can say that between 1950 and 2021, the Indian logistics market has grown from 86.5 million tonnes to approximately 5,000 million tonnes which is about 55 times, whereas rail cargo has grown only by about 20 times from about 73 million tonnes to 1,420 million tones. This actually shows a decline in the railway

Nowadays, around 65-75% of the wagons produced are purchased by the Indian Railways.

freight. So the current government's decision in the form of Mission 3,000 million is extremely significant financial or economical strategy.

The Indian logistics industry is too much dependent on road transportation while the railway provides a better and greener alternative. What opportunities do you foresee for railways in freight movement and logistics?

Yes, as of today, 60% of the logistics movement in the country is catered by the road sector and railways account for only 27%. The share of Railways remains behind the road sector mostly because of the unavailability of proper feeder services providing last-mile connectivity for the goods to be delivered.

As per the National Rail Plan 2030, Indian Railways plans to increase the share of railways in overall logistics from 27% to 45%. To achieve that, as per their estimates, they will require around 5.44 lakh wagons by 2031.

However, the demand scenario is rapidly changing with the rail industry implementing and using schemes to encourage greater private participation, not only in the purchase of rail cars but also in the ownership of infrastructure. Nowadays, around 65-75% of the wagons produced are purchased by the Indian Railways. The rest is taken by the private sector operators. In addition, the automotive industry also purchases rail cars from fleet operators.

Can you elaborate on your manufacturing plans, key products, and solutions for railways?

In terms of manufacturing wagons, we are in a good capacity considering the market outlook. Our order book is good enough to cover our capacity for the next two years. However, alongside the Indian Railways' procurement plan, a very strong private sector demand has been rising and in tune with the same, Jupiter Wagons has already begun adequate measures to increase the capacity up to 10,000 wagons by the year 2025. There are further plans to add on more capacities in order to service this by producing more wagons for the next three to four years and we look to integrate ourselves further. We are one of the market leaders in terms of providing quality at an effective cost.

We own manufacturing facilities spanning over 200 acres of land parcels spread across India and located near Kolkata and Jabalpur. When Jupiter Wagons started, we invested in our own foundry, and over the period of time cold roll mill has been added in-house for captive consumption. This reduces the dependency on external suppliers which other manufacturers

are bound with. Jupiter Wagons is the most integrated wagon manufacturing facility in the country today.

Our current annual manufacturing capacity is 8,000 wagons. The proportionate number of couplers and bogies are also manufactured in-house with a suitable enhancement of our foundry capacity.

We are exploring the brake system market in Indian Railways, which is 2,000 crore market for high-speed brakes. Indian railways have completely transitioned from the old ICF coaches to the LHP coaches, so the brake system dynamics have changed in the railways. Currently, Indian Railway is looking for brakes that can run at 200 km per hour.

To cater and deliver the high-speed braking system, we have entered into a JV with Czech company DAKO, one of the biggest manufacturers of brake systems in Europe. DAKO-CZ has a 50 percent stake in our joint venture called JWL-DAKO.

Additionally, we have formed a JV with KOVIS, a Europe-based company manufacturing brake discs. We hold a 25% market share of high-speed braking systems in India currently.

The brake market in India is dominated by two players; Knorr Bremse, a German company, and Wabtec, an American multinational company (which has taken over Faiveley a French company which is the manufacturer of brakes). We will be the third player in the market. In 2023-24, we are expecting the brake system JVs to give us additional revenues of about Rs. 300-500 crores.

Government has taken up various initiatives for the revival and modernization of railway stations, railway lines, and supporting infrastructure. How long it will take to streamline the overall railway infrastructure?

The Indian Railways has taken several measures in improving the infrastructure and the quality of services. Indian Railway is the world's fourth largest rail network and also the largest consumer of electricity. It consumes approximately 20 billion kWh of electricity annually and is taking a multi-pronged method to go green and decarbonize by growing its sourcing of renewable energy (RE) to electrify its traction network and decrease its energy (fossil fuels) consumption. Indian Railways has completed the electrification of 52,247 route kilometers (RKM) out of 65,414 RKM as of April 2022. According to Railways, the electrification will be completed by 2023-24. Indian Railways have already cancelled the diesel locomotive orders and will be concentrating on electrical locomotives only.

As of today, 60% of the logistics movement in the country is catered by the road sector and railways account for only 27%.

Other efforts by the Railways are doubling of existing lines, up-gradation of railway stations, developing a large high-speed train network interconnecting major cities in India and developing various freight corridors within the country.

There is already an outlay of about Rs 15,000 crores by the government towards the upgradation of the number of sections of the Indian Railway network.

How is Jupiter Wagons drawing up strategies to grab more share of growing business opportunities with Indian Railways?

Since our inception, we were in the business of manufacturing of wagons for Indian Railways and we have a vision to be a one-stop solutions provider marked with high standard of quality and technology within the sector. Essentially, we started with the manufacturing of wagons, but we expanded our portfolio to the manufacturing of shipping containers, and load body applications for commercial vehicles OEMs, through our acquired entity CEBBCO. We are also in the business of brake systems and hope to make

the brakes India program achieved. The JV starts manufacturing the brake systems. We are also expanding the brake systems for passenger and freight wagons.

Would you like to share any other input on your business development and the market outlook?

India's railway transport is getting support and advancements from the government. On the subject of becoming the world's largest railway entity, the government's initiatives have been designed for the benefit of the supporting businesses. Never has there been a better opportunity for railways to propel themselves to be the top transport sector in the world.

We at Jupiter Wagons continually strive to optimize production and provide high-quality products. To do the same, we need the right talent. We are investing in a work culture conducive to growth to attract and retain the best talent who can contribute to the overall growth of the company and be part of our journey. Another important aspect is design knowledge and we are investing in R&D and building a very strong design team. 

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Metro in India will continue to become a dominant mode of transport in future.

SANDEEP GULATI

Regional CEO-South Asia and MD, Egis India

How do you assess the current market scenario of Indian Railways?

The growing demand of Indian Railways is directly related to the growth of economy, the mobility of the population and other related factors. India has the fourth-largest railway system in the world, behind only the US, Russia and China.

The Indian Railways consists of a total track length of 126,366 km over a 67,956 km of route along with 7,335 stations.

Bullet Train: Mumbai-Ahmedabad high-speed rail project sanctioned at a total cost of \$14.27 billion. The railway sector of India aims to electrify the entire network by 2023 which will lead to annual energy savings of \$1.55 billion. Indian Railways has commissioned Wi-Fi at 6,089 railway stations across the country. In order to achieve its green mission, Indian Railways has solarized more than 1,000 stations. As long as 2,000 km of railway network to be brought under Kavach, the indigenous world class TCAS (signalling system) in 2022-23. Kavach has been commissioned at over 850 Rkm in FY22. As many as 400 new-generation Vande Bharat trains are to be manufactured during the next three years.

What are the key developments?

The National Railway Plan (NRP) 2030 will endeavour to harmonize and integrate the rail network with other modes of transport and create synergy for achieving seamless multimodal transportation network across the country.

Indian Railways@2030: Future Perspective:

- High-speed network on Golden Quadrilateral route.
- Introducing new technologies in Railways. Promotion of Digital Systems & Smart Technologies for Indian Railways
- Capacity enhancement and congestion reduction


- Station redevelopment: land & railway infrastructure modernization
- Innovative financing Solutions: investment opportunities for new projects

How do you look at the metro rail development in India? What are the challenges and opportunities you look forward in metro rail sector?

Metro Rail is emerging as the green and preferred sustainable mode of urban commute in India. Metro Rail has been widely accepted as an alternative to mass transport in urban India because of its huge population, heightened vehicular traffic and increasing pollution. Metro in India will continue to become a dominant mode of transport in future. Additionally, other modes of urban transport like rapid rail, light rail etc. are also gaining traction.

Nearly 1,000 km of metro lines are operational in various cities in India and is very soon expected to cross the 2,000 km mark with a series of metro projects under different phases across the country. The government has supported the Metro and rail sector by way of business-friendly policies and financial support.

When we talk about the opportunities, the pace with which the population of India is increasing along with the government's model of development, in such scenario, it's pretty impossible to neglect the Mass Rapid Transit System, especially metro rail. The number of cities with metro rail increased to 18 from 5 in the last five years. The proposal is to increase it to 25 cities by 2025.

Major challenges include: project funding, capital cost and operational revenue, land acquisition, estimation of traffic demand forecasts/ridership, underground versus elevated corridor, LRT vs metro, and loss of trees/green cover. 

Metro Rail is emerging as the green and preferred sustainable mode of urban commute in India.



It is important to have a strong desire across the entire system to improve.

SUNIL SRIVASTAVA

Managing Director, Balaji Railroad Systems Pvt. Ltd.

How do you look at the transformation taking place in Railways?

The changes happening on Indian Railways (IR) are a welcome step. The modernization was long overdue. Despite being amongst the largest networks in the world, IR has not been able to be up to date with technology on a consistent basis. Historically, IR has been dependent on human skills rather than pure technology, given the fact that it has been seen as an employment-generating organization. But if IR has to be relevant then this has to change. The organization-wide mindset must be oriented to use technology for safety, quality, and efficiency. A start has been made towards this and it is certainly a welcome step. But the important point is that this should be an ongoing process and not a knee-jerk reaction.

What steps are needed to improve the efficiency and how far the government policies support the development of Indian Railways?


Operational efficiency is a function of various disciplines and needs a coordinated effort and will to improve. While policies can be made by the government, the implementation is with the executive. It is important to have a strong desire across the entire system to improve. In my opinion, the main step is to accept the fact that improvement is indeed needed and then be open to suggestions and change. As an example, the concept of increasing the speed of trains using better-designed train sets is a good idea but only half implemented. The speeds cannot increase substantially, even though the trains are designed for it, without having access controlled tracks. This has not been done, thereby the full speed and technology potential of the Vande Bharat trains has not been fully utilized. Such limited improvement in efficiency is not in the best interest of IR.

What is your outlook on the metro rail development in India?

The outlook in this sector is certainly very bright especially given the fact that there is more focus on reducing emission. Since more and more cities are now planning for a mass transit system, there are good opportunities for all stakeholders, i.e., consultants, contractors, manufacturers etc. There are opportunities for newer technologies but this is also a challenge as the authorities need to look beyond the conventional technologies. Going forward, I see a lot of opportunities for operations & maintenance of metro systems as the Metro companies would like to run a lean organization and will hence look to outsource this major activity.

There is a challenge for Metro companies in making the system more acceptable to the citizens and self-sustaining as most of the metros have not been able to reach their full capacity. Authorities need to be open to different technologies and systems rather than just sticking to conventional heavy metro rail.

What is your vision on making Indian Railways and Metro systems into a world-class level?

World Class is a very confusing term to me. Our metro systems are on par with the best in the world and better than a number of them. Yes, there is certainly room for IR to improve its infrastructure, on-time performance, customer experience, and safety. Some beginning has been made by making the stations modern, clean and customer-centric. But just making a good building is not enough; the train operations also have to match this to give a complete experience to the traveller. My vision is that a passenger on either railway or metro system should get the same experience as an air traveller gets in all aspects whether in the train or in the station. 

Authorities need to be open to different technologies and systems rather than just sticking to conventional heavy metro rail.



The Metro rail system in cities contributes to shaping sustainable urban growth.

SVR SRINIVAS, IAS

Chairman, Maha Mumbai Metro Operation Corporation Limited (MMMOCL)

How do you assess the current market scenario of Metro rail network in India? What are the key revivals happening?

The Metro rail signifies sustainable development in developing the urban transport system in the metropolis and its contribution to shaping sustainable growth in urban areas. The Metro rail system in cities contributes to shaping sustainable urban growth.

MRTS plays an important role in making regional habitats commuting easy, stress-free and pocket friendly. Many states and cities are making huge investments to ensure that the community at large is benefits. Existing transport systems of many cities are already running to their full capacity, hence new rail network system is the need of the hour.

The world is changing gradually so is the next generation. They want better option for connectivity which will be time saving and ensure the conservation of environment. Many people have switched to healthy traveling, and have started using cycles or battery-operated e-vehicles which ensure zero carbon emission.

Giving them a reliable and punctual transit system will be the new age travelling.

How is Maha Mumbai Metro Operation Corporation Limited (MMMOCL) integrating the operation and maintenance of all Metro corridors under one authority?

The Mumbai Metropolitan Region Development Authority (MMRDA) established MMOCL on 10 June 2019 to carry out the 'Operations and Maintenance' of all the upcoming Metro corridors in the MMR (except Metro Line 3). The idea is to integrate the Operations and Maintenance of all Metro corridors under one authority with objectives of independently carrying out the business of Operation and Maintenance (O&M), and related functions of all Metro lines in the Mumbai Metropolitan Region, as well as the Planning, Identification, Development, and Implementation of all Non-Fare Box Revenue measures. It is also involved in the execution of property development and construct, maintain or lease out various facilities about rail transport system. Integration of all Metro lines is crucial for which MMOCL is planning to integrate the ticketing system which will be synchronized as and when new lines will be coming up, including all Automatic Fare Collection (AFC) Station Level Equipments (SLEs).

Metro rail construction still needs to pick up in Mumbai. What steps are needed, and what is MMOCL doing to encourage safe operations and maintenance?

Intervention and follow-up with other government departments are needed at the highest level. Regular coordination with local municipal authorities, dynamic planning and close monitoring are also needed to prioritize



construction activities. Traffic planning, diversion and management will also help the smooth metro rail construction in Mumbai.

MMRDA is striving to change the travelling experience and has ensured that tenders of multiple projects have been awarded to various contractors in packages to fast-track the construction activity. For ensuring safe operations and maintenance, we truly believe that quality people are an essential part of the organization. We provide rigorous training and hands-on experience to ensure that our staff is prepared for the next level.

What are the challenges of Mumbai in constructing major infrastructure projects like the Metro network?

For developing any big project, there are many difficulties, but if it's in Mumbai then it is a very big deal. Metro is a mass rapid transit system, which has several challenges in it.

Mumbai is a densely populated as well as congested city which never sleeps, people work there almost 24×7. Developing a whole new transport system is like a nightmare, as it requires good planning and coordination which other agencies for managing all day running traffic as well as the public.

The main challenges involved in the metro rail projects at the pre-development stage during the development stage and the operations stage can be categorized as political challenges, construction challenges, market and revenue challenges, financial challenges, legal challenges, operating challenges, congested road corridors and non-availability of Right of Way.

Also, there are several other challenges too, such as land acquisition, resettlement & rehabilitation, geotechnical challenges, financial visibility, and getting clearance from different government agencies, including the environment ministry, etc.

We will overcome these difficulties through better planning and good support from the state government as well as locals.

How do you look at the metro rail systems in Mumbai and suburbs bringing efficiency and speed?

The Mumbai Metro is a mass rapid transit system serving the city of Mumbai and the wider Mumbai Metropolitan Region. The existing transport infrastructure is already encumbered, and as an alternative to that Metro, a network is being developed. The total 337 km length of the Metro network system is designed and being implemented by MMRDA to reduce traffic congestion in the city. Metro rail will supplement the overcrowded Mumbai Suburban Railway as



well as the existing regional transport network. Metro is a type of high-capacity public transport. Commuters love to have best-in-class travel on a pocket-friendly budget. As the commuters get a comfortable, environment-friendly, and safe option, they will no longer use their private vehicles, resulting in zero carbon emissions. These Metro corridors are fully elevated, as there will be no effect on existing road-based transport networks. But travelling by Metro rail is more convenient and hassle-free.

How are you looking at the development of metro rail networks in the coming years?

Mumbai got its first metro rail in 2014 and, in April this year on Gudi Padwa, the 20 km first phase of Metro Line 7 and 2A were opened to public use between Aarey and Dahanukarwadi, the second phase of these two elevated Metro lines are in the final stage of completion and is expected to be fully open to the public soon.

The State Government appointed MMRDA as the nodal agency for construction of the Metro network in MMR. The MMMOCL will handle the operations and maintenance of all lines except the city's first underground Metro 3. As all lines get fully operational, the dream of Multi-Modal Integration (MMI) and last mile connectivity will soon become a reality.

For ensuring safe operations and maintenance, we truly believe that quality people are an essential part of the organization.
