



**International Rail Conference 2023**  
**12-13 October 2023 | Pragati Maidan, New Delhi**

**Innovation and Technology: Changing the Future of Railway**

Transport infrastructure is critical for growth of manufacturing and service sectors. Apart from providing a vital connectivity, the Indian Railways plays a pivotal role in realizing the country's 'Make-in-India' ambition which seeks to establish the country as a global manufacturing hub.

Technological innovations are expanding the capabilities of railway systems and helping railways to achieve faster speeds and greater capacity to compete with other forms of transportation. Digitalisation is also embraced in all spheres of operations to improve revenues and passenger experience.

With the aim to modernize and upgrade its technology, the Indian Railways envisages a prospective investment of \$190 billion in the next five years and create private investment worth \$4 billion through Public-Private Partnerships. This will add 1.5% to the country's GDP by building infrastructure to support 45% modal freight share of the economy. Budget 2023-24 announced railway capital outlay at the highest ever value of Rs 2.4 lakh crore. The budget focuses on freight with an investment of Rs 75,000 crore under the National Rail Plan (NRP).

**Key Investment Opportunities:**

- Dedicated freight lines/ Suburban corridor projects
- Passenger/ Freight terminals/ logistics parks
- Railways electrification
- Testing facilities and laboratories
- Technological solutions to improve safety and reduce accidents
- High-speed train projects
- Signalling systems
- Non-conventional sources of energy
- Rolling stock procurement
- Rolling stock manufacturing and maintenance facilities

With the above background, CII in partnership with the Ministry of Railways is organizing **International Rail Conference**, themed **Innovation and Technology: Changing the Future of Railway** alongside 15<sup>th</sup> edition of the **International Railway Equipment Exhibition (IREE)** on **12 & 13 October 2023 at Pragati Maidan, New Delhi.**

**OBJECTIVE:**

The Conference aims to facilitate high-level discussions on emerging scope and opportunities of partnership in the modernisation and expansion of the Indian Railways, to create a world-class railways system in the country.

## KEY THEMES:

The conference will feature discussions around new and emerging technologies and infrastructure, domestic manufacturing ecosystem to promote Make in India, its progress towards the vision of AatmaNirbhar Bharat, Sustainability, Circular Economy, Urban transit system, opening of new avenues in the Indian Rail Transportation and Infrastructure Sector through networking sessions.

- ***Railway Infrastructure – Setting new Milestones and the Emerging Opportunities.***

The Indian Railways has set an ambitious target of increasing private-sector participation in railways by 2025 across passenger and cargo trains, rolling stock, and stations. To become future-ready, Railways is on its way to deliver projects worth more than Rs 115,000 crore in the next few years. It is also envisaging to develop / redevelop stations into world-class transit hubs with an investment of Rs 1, 00, 000 crore and construction of six dedicated freight corridors of 2,843 km by June 2023, 33,000 kms to be electrified by 2023 at a cost of \$2 billion annually, etc.

It is aimed to discuss the investment and business opportunities in rail infrastructure and on scope for private sector participation as well as implementation roadmap.

- ***Make in India: Imperatives for Building Competitive Railways Manufacturing Ecosystem***

As India has earned itself a place for competitive manufacturing destination for many sectors of the economy, e.g., automobile, defence, pharmaceuticals, etc., there is a huge scope to replicate the same in railway sector. The Indian Railways not only offers the biggest market for railway equipment in the world, but it is also now increasingly looking for new and best technologies, and high-grad quality products in its endeavour to modernize and upgrade the Indian Railways.

It is important to discuss the policy, regulatory, and technological support required to build a competitive Railway Manufacturing Ecosystem in India. This will help in estimating requirements of railways across the world in the next few years and draw out a roadmap.

- ***Innovative Financing Models for PPP***

The Indian Railways will require around Rs 50 lakh crore in capital investment between now and 2030 for network expansion and capacity augmentation, rolling stock induction, and other modernization projects. Public Private Partnership (PPP) model has emerged as one of the tools for the rail infrastructure financing to bridge the gap in capital funding, induct current technologies, and increase efficiencies. The Government has also released the ambitious Rs 6 lakh crore asset monetisation programme, where the Railways have the largest share of raising Rs 1.52 lakh crore by monetizing its brownfield assets.

Discussions could focus on solutions for Rail Infrastructure Financing including emerging opportunity for the private sector. The session will also facilitate a discussion on the challenges going forward and the support ecosystem that is needed to make it happen.

- ***Project Management: Scope and Opportunities and incorporating circular economy principles.***

The pace of Rail infrastructure creation has been at an all-time high. However, the rail projects encounter problems of Cost Overruns and Funding Challenges throughout its lifecycle, complex

planning and coordination among multiple stakeholders, challenges on technical and engineering considerations, and mitigating potential negative impacts and the regulatory and legal considerations of obtaining necessary permits and approvals, navigating legal processes, safety standards, and adhering to environmental regulations.

Also, the concept of circular economy is now applied to all types of projects, advocating the industrial systems to be restorative, regenerative, and designed on closed-loop principles, together with offering considerable potential for innovation, job creation, and sustainable economic development.

Discussions will focus on how to address the challenges within the circular economy paradigm to change the current production and consumption pattern of “take-make-dispose” with steps required to close the loops by reusing wastes and resources as well as slowing material loops by developing long-lasting, reusable products.

- ***Urban Rail Transit Systems: Transforming the Surface Transit for New India***

India is fast urbanizing with better livelihood and opportunities in the cities. This is already congesting the current local and intercity / satellite towns’ roads. Public transit system such as busses are already overcrowded. Metro has come as boon to cities, like Delhi and Mumbai, where further augmentation of roads has come to its limits. Similarly, the Rapid Rail Transit System (RTS) will make intercity travel at much ease and comfort. Such projects in India add to the railway market. Besides, futurist technologies such as hyperloop system, lite-metro systems, and intercity through dedicated corridors of transit system for masses.

- ***Artificial Intelligence and Digital Transformation of Railway Businesses***

Data analytics, involving Artificial Intelligence and Quantum Computing, holds the key to modernization of the Indian Railways system. Major technological breakthroughs are impacting all spheres of railway functioning and thus revolutionizing computing, digitization, and opening new perspectives in accelerating data exchanges and processing. The development of new technologies (Big Data, IOT, AI etc.) also calls for mastery of new challenges, especially related to passenger and cyber security.

Discussions could focus on how the technological advances can be an effective tool in reducing the workload and eliminating the wastage of efforts, improving efficiency of security aspects and providing better security to the travelling public.

- ***Towards Safer Railway Systems:***

The Indian Railways has taken multiple steps to enhance safety in operation such as elimination of unmanned crossing and hi-tech anti-collision devices. Technology has also been used to real time track train movement and amenities such as Wi-Fi in train and stations, etc.

The Indian Railways is developing and creating technology in areas such as signalling and telecommunication with 15,000 kms being converted into automatic signalling and 37,000 kms to be fitted with ‘KAVACH’, the domestically developed Train Collision Avoidance System. Advancements in Railway Signalling and Telecom Technologies are facilitating the transformation of the system in a big way with modern technologies, like Kavach, 5G, Centralised

Traffic Control and Industry 4.0. The development of automatic Train Protection System (Kavach) is a boost to the vision of ‘Make in India’.

- **Green Railways:**

Globally, the railway sector has a target to be net zero by 2050. The Indian Railways has a much more ambitious target – of attaining the net zero goal by 2030. Projects of the Indian Railways, which touch the lives of over a billion plus people – are at various stages of lowering emissions through three sources; lowering emissions directly from running of trains, factories, and machinery; lowering emissions from energy bought by Railways – for traction, lighting, cooling, and other provisions; and lowering emissions across value chains – for products purchased, for employees commuting, for business travels, among others. From booking tickets online to running trains and stations using solar power; re-using electricity wasted during braking; re/using wastewater, food, and solid waste management the Indian Railways is practising sustainability across its trains; factories; housing colonies; stadiums; hospitals; offices and other assets.

- **Passenger experience**

Ensuring seamless, secure connectivity, from the station to the train, is foundational for creating a modern passenger experience and developing new revenue services.

Indian Railway is harnessing innovations to usher in a new era of sustainable mobility in India – one that offers a safer, reliable, faster, punctual, and comfortable travel for the passengers - making every train journey a satisfying experience while being environment-friendly with lowest possible carbon footprint. The passenger experience has seen a paradigm shift in the recent years since introduction of ergonomic designs of the trains, multiple passenger friendly features, enhancing safety as well as riding comfort. The overall passenger segment has registered the highest ever revenue of approx. Rs 63000 crore in 2022-23. It is proposed to discuss the railways commitment towards a socially inclusive railway system improvement in the safety, efficiency, and service levels of rail operations.

- **Mission 3000**

As per NITI Ayog's Vision 2030 document, Railways need to carry 40-45% share of the freight on economic and environmental considerations. National Rail Plan (NRP) was released by MoR in the year 2020 aims to enhance the modal share of Rail to 40%-45% of logistics market primarily by creating adequate capacity ahead of demand.

Accordingly, many capacity enhancement works were envisaged for easing the bottlenecks / constraints and augmenting the network to make it capable of moving 3600 MT cargo by 2030-31. The Railways formulated the present Mission 3000MT in May 2022, as an intermediate milestone towards achieving aforesaid ambitious target of NRP by identifying and prioritizing crucial capacity enhancement works for implementation before 2027 and suggesting an action plan for making requisite policy and strategic interventions to induce desired modal shift to Rail.

It is proposed to deep dive into fasters movement of freight and other aspects such as intermodal connectivity and logistic system for better handling of not just bulk but also break-bulk commodities.

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