Report of Conference on **India's Railways VISION 2030 AND VIKSIT BHARAT 2047**

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Introduction

Indian Railways plays a crucial role in shaping the economy and infrastructure of the nation. With the vision for 2030 focused on modernizing the network, and the broader national goal of Viksit Bharat (Developed India) by 2047, this conference aimed to address key challenges, explore opportunities, and set a roadmap for the future.

The conference served as a platform for industry leaders, policymakers, and experts to discuss the modernization of Indian Railways and its significant role in realizing the vision of a developed India by 2047. The conference focused on key themes such as rail infrastructure, sustainability, and technological innovations.

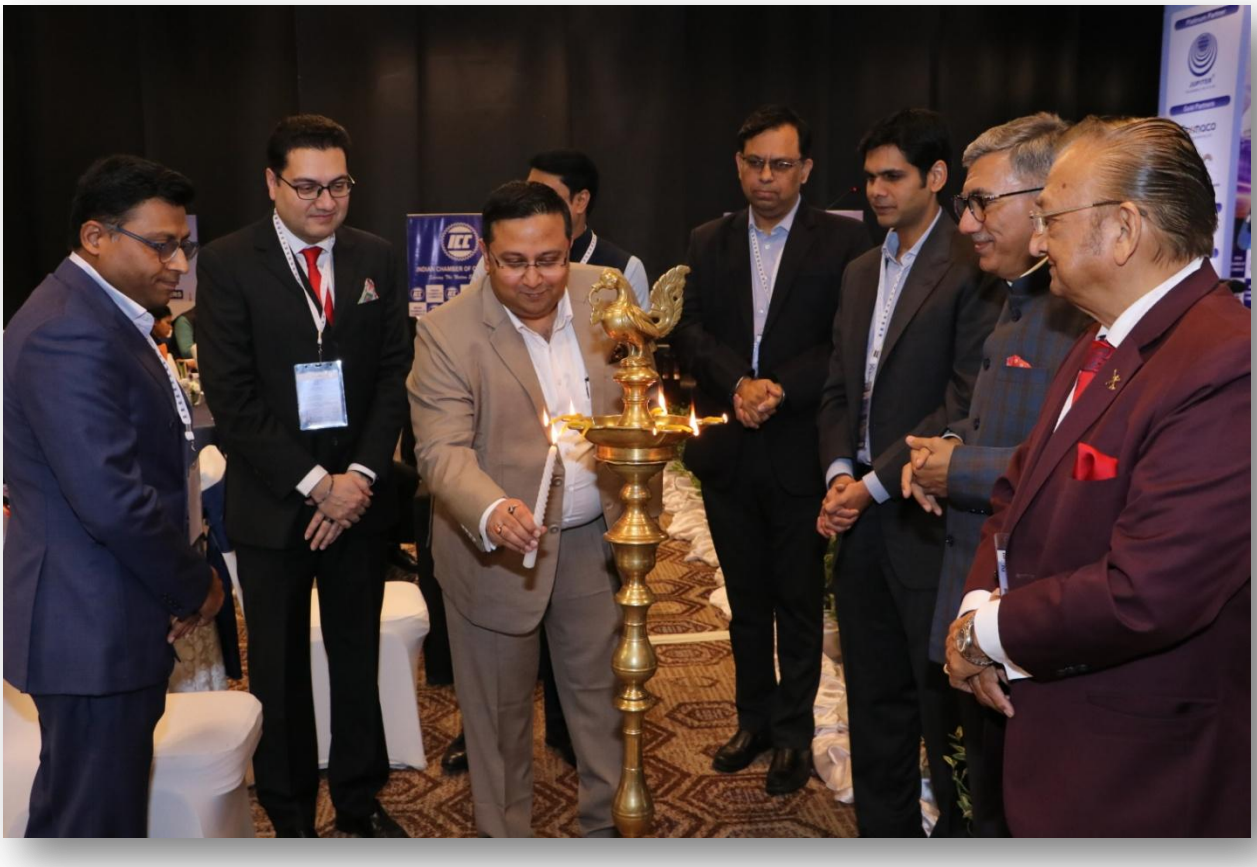
The conference on "India's Railways Vision 2030 and Viksit Bharat 2047" Organized by Indian Chamber of Commerce (ICC) was held on December 6, 2024, at Desire Hall, Hotel Le Méridien, New Delhi.

The conference is proudly supported by a range of esteemed partners and contributors.

- **Jupiter Wagons** is the Platinum Partner, with the theme *Engineering the Future*.
- **Texmaco Rail & Engineering Ltd.**, **JSL (Jindal Stainless)**, and **Western Carriers (India) Limited** are the Golden Partners.
- **CYLUS** is the Corporate Contributor.
- **CILT India** is the Knowledge Partner.
- **CARGO INSIGHTS** is the Media Partner.

Inaugural Ceremony

The program began with the **Holy Lighting of the Lamp**, a symbolic gesture to seek blessings for the success of the conference.



- **Welcome by:** Mr. Abhishek Jaishwal, Assistant Director at the Indian Chamber of Commerce (ICC), delivered the welcome address. He expressed gratitude to the guest speakers, distinguished attendees, and participants for their presence. Mr. Jaishwal highlighted the importance of Indian Railways in national development and emphasized the role of the ICC in organizing such pivotal discussions.

- **Honoring of Guest Speakers**

  Following the welcome address, the guest speakers were formally honored in recognition of their contributions to the railway sector. This moment of appreciation set the stage for the insightful discussions to follow.

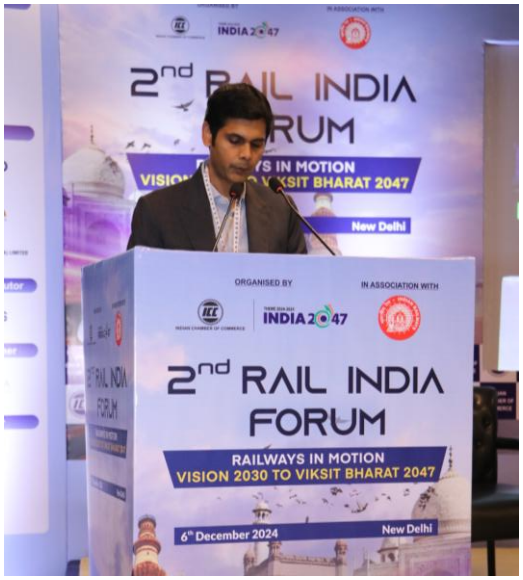
Inaugural Session

The inaugural session featured key addresses from leading industry figures, outlining the vision for Indian Railways and the road to a developed India

Welcome Address

The forum commenced with a Welcome Address by **MR. ABHYUDAY JINDAL,** President of the Indian Chamber of Commerce, shared the International Chamber of Commerce (ICC), inaugurated in 1925, is approaching its centenary year in 2025, marking 100 years of its establishment and contributions.

Mr. Jindal expressed his enthusiasm for the forum, highlighting the significance of the railway sector in shaping India's infrastructure, economic growth, and global standing.



He emphasized the role of collaboration between the public and private sectors in realizing the ambitions set for Vision 2030 and Viksit Bharat 2047.

Mr. Jindal also discussed the vital role of the wagon industry in transforming the railway sector, particularly in terms of improving cargo rail transportation to meet future demands. He outlined the strategic Rail Plan 2030 for enhancing rail infrastructure and increasing capacity for freight movement, which is essential for India's economic growth.

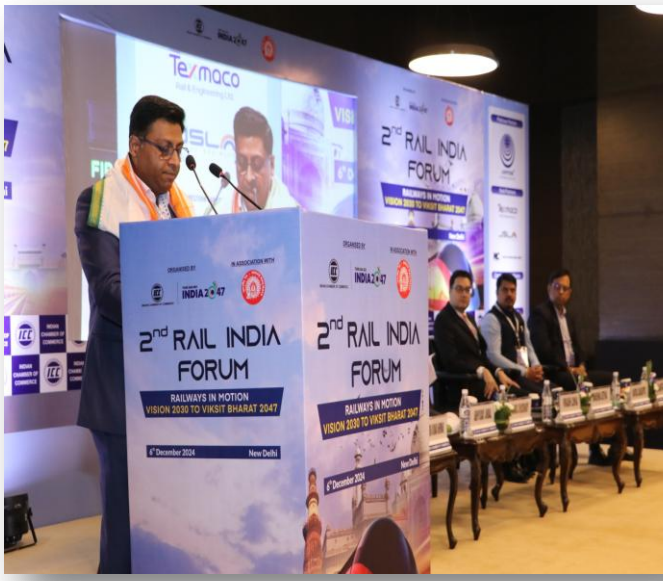
In addition, Mr. Jindal highlighted the importance of building a sustainable rail ecosystem, one that integrates modern technologies and practices to improve efficiency.

He stressed that Indian Railways is working diligently towards reducing carbon emissions, with a clear goal of achieving net-zero emissions in the near future. He mentioned Kavach, the automatic train protection system, as a crucial initiative for improving railway safety and efficiency, reinforcing the vision for a greener and safer railway network.

Keynote Address:

MR. VIKASH LOHIA, Chairman of the National Railway Committee ICC and Director of Jupiter Wagons, delivered the Keynote Address on the topic National Railway Plan 2030 and Viksit Bharat 2047.

In his address, Mr. Lohia reflected on the *Golden Age of India* and its bright future, emphasizing how the Indian Railways (IR) will play a pivotal role in shaping the country's socio-economic landscape. He highlighted how the modernization of the railway system will contribute to the country's growth and development, both socially and economically. He expressed his belief that railways are not only the backbone of the nation's transport system but also a crucial component in realizing India's long-term vision for 2047.



Mr. Lohia presented an in-depth overview of the Railway Plan 2030**,** which focuses on transforming Indian Railways into a modern, efficient, and sustainable network. He stressed the importance of expanding railway infrastructure, introducing high-speed trains, and investing in state-of-the-art technologies to enhance passenger experience and freight transportation.

He also discussed the strategic need for financial support from other countries to meet the ambitious goals of modernizing Indian Railways.

He pointed out that international collaborations and investments will be essential for funding the vast infrastructure development projects outlined in the Railway Plan 2030, particularly the Vande Bharat Express and other high-speed rail initiatives. This support will help accelerate the progress toward a world-class railway system.

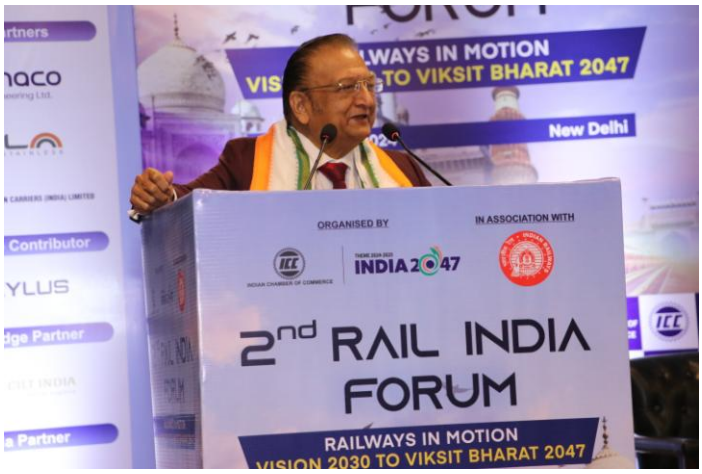
MR. SUBHASH GOYAL, Chairman of the National Travel, Tourism & Aviation Committee ICC and Chairman of STIC Travel Group of Companies, began by congratulating the conference organizers and *Mr. Sanjiv Garg*, Secretary General of the Chartered Institute of Logistics & Transport (CILT) India, for their efforts in bringing together key stakeholders for such an important event.

Mr. Goyal emphasized the crucial role of **supply chain management** in the modernization of Indian Railways. He spoke about the need for **cost-effectiveness** in rail operations and the importance of **technology integration** to optimize both freight and passenger services. He

highlighted the *East-West Dedicated Freight Corridor* project as an example of how infrastructure development can facilitate efficient transport across regions, connecting key industrial hubs and enabling smoother movement of goods.

He also commended the government's **Ease of Doing Business** reforms, championed by **Prime Minister Narendra Modi**, which have significantly improved the business climate in India. These reforms have made it easier for businesses, including those in the railway sector, to operate more efficiently, ensuring streamlined processes, reduced red tape, and increased foreign investment. This initiative is especially important in attracting investment for modernizing railway infrastructure and facilitating partnerships with international firms.

Additionally, Mr. Goyal acknowledged that the railways have the potential to play a significant role in reducing logistics costs currently accounting for 14% of GDP and he shared the progress made by Indian Railways in its efforts to reduce carbon emissions, referencing the 2023 Carbon Emission Plan, which outlines the railway's commitment to sustainability.



He mentioned the solar panel projects being rolled out across railway stations and trains, marking a significant step towards achieving a greener, more sustainable transport network.

He also emphasized the interplay between tourism and freight connectivity. Mr. Goyal noted how improving the efficiency of railways benefits not only the movement of goods but also supports tourism by making travel more accessible and attractive. He pointed out that Indian Railways is responsible for **carrying 23 million passengers every day**, and with the integration of better services, it can enhance the travel experience for passengers while continuing to serve the nation's economic and logistical needs.

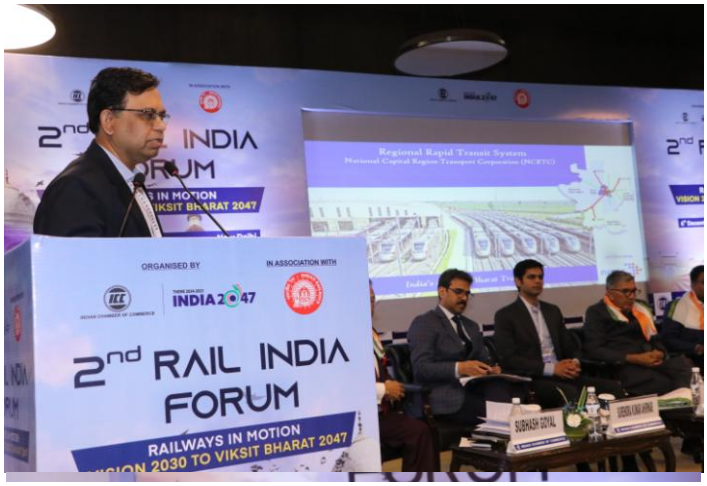
MR. RAJAT GOSAIN, GGM/Planning at the National Capital Region Transport Corporation (NCRTC), delivered a Special Address, starting his presentation with a PowerPoint overview of the Regional Rapid Transit System (RRTS).

Mr. Gosain provided a detailed explanation of what RRTS is and the many benefits it offers to urban mobility. He highlighted the RRTS as a modern, high-speed transit network designed to reduce travel time, ease congestion, and provide seamless connectivity between urban centers and suburban areas. The system, which is being implemented in various corridors, including the

Delhi-Meerut corridor, is expected to provide efficient, safe, and sustainable public transport options, significantly improving the quality of life for commuters.

He further discussed the multimodal integration aspect of the **Sarai Kale Khan hub**, one of the key nodes in the RRTS. This hub is being developed as a critical point for integration between the RRTS, Metro, and bus services, making it easier for passengers to switch between different modes of transportation. This integration will streamline travel across multiple regions and ensure a smoother and more connected experience for daily commuters.

Mr. Gosain also emphasized sustainability and shared that the NCRTC received the Sustainability Award 2024 for its commitment to green practices in transportation. This award recognizes the efforts to minimize the environmental impact of the RRTS projects, which include the use of solar energy, electric trains, and other eco-friendly technologies to reduce carbon emissions.



Additionally, Mr. Gosain discussed the Delhi-SNB RRTS project, which is one of the three prioritized rail corridors in the planned RRTS network in the National Capital Region (NCR). The Delhi-SNB RRTS will connect urban nodes across Delhi, Gurugram, and the Shahjahanpur-Neemrana-Behror (SNB) urban complex in Rajasthan. Spanning 107 kilometers, it will pass through densely populated sections of the NCR and provide an efficient commuter system with stations every 5 to 10 kilometers. The corridor will facilitate high-speed mobility with high-frequency operations (every 5-10 minutes) and a design speed of 180 km/h.

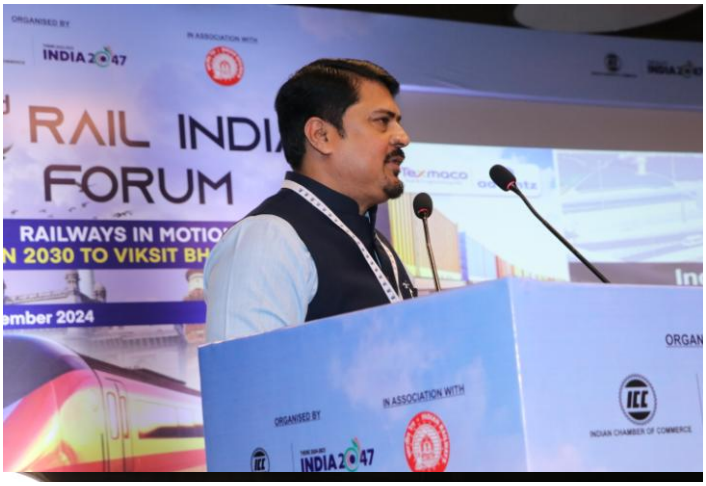
The project will finance the construction of the corridor, 11 elevated and 5 underground stations, as well as track work, traction, and maintenance facilities. Furthermore, the proposed corridor will support land value capture and transit-oriented development (TOD) projects, contributing to sustainable urban development.

Mr. Gosain concluded by reinforcing the strategic importance of the **RRTS** in transforming regional transport and aligning with the broader goals of **Vision 2030** and **Viksit Bharat 2047**. By promoting **multimodal connectivity** and **sustainable practices**, the **RRTS** is set to play a pivotal role in the modernization of India's transport infrastructure.

MR. KUNTAL DASGUPTA, Chief Business Officer at Texmaco Rail & Engineering Limited, delivered a Special Address, beginning with a warm welcome and a PowerPoint presentation outlining the key aspects of Vision 2023 for Indian Railways.

Mr. Dasgupta emphasized the critical role of the railway sector in India's transformation, particularly in the context of the Viksit Bharat 2047 vision. He discussed how Indian Railways is evolving to meet the demands of the future, focusing on the modernization of rolling stock, and the role of the railway industry in driving this transformation. Mr. Dasgupta highlighted the importance of strategic partnerships between the public and private sectors to achieve these ambitious goals.

He further touched on the adoption of state-of-the-art technology**,** which is essential for improving the overall efficiency and sustainability of the railway system. This includes using advanced technologies to enhance **connectivity** and reduce reliance on fossil fuels, contributing to a cleaner environment. Mr. Dasgupta spoke about efforts to modernize connectivity**,** making it more efficient and accessible, which is pivotal for the growth of the sector.



He also highlighted the National Rail Plan 2030, which aims to significantly increase rail freight capacity, thus boosting the economy. He emphasized the importance of enhancing the freight market to support India's industrial growth and meet global standards.

In conclusion, Mr. Dasgupta underscored the importance of sustainability in both technology adoption and rail infrastructure development**.** He stressed that integrating sustainable practices into railway operations would be key to ensuring the long-term growth and success of the sector.

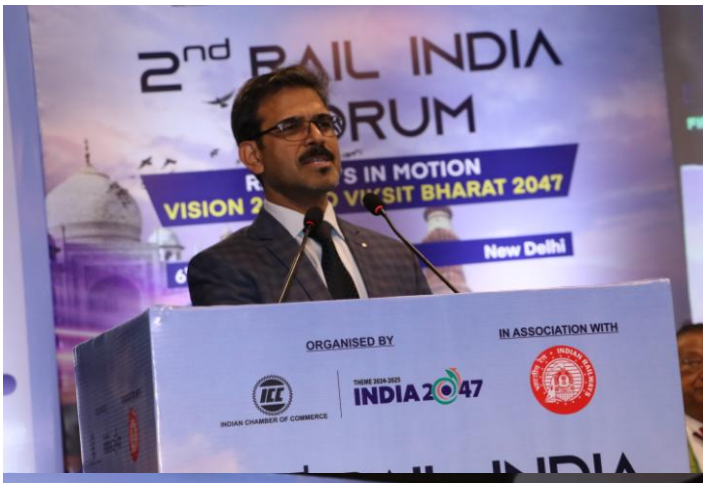
DR. SURENDRA KUMAR AHIRWAR, Joint Secretary at the Ministry of Commerce and Industry, Government of India, began his Special Address by apologizing for his late arrival and expressing his appreciation to Mr. Sanjiv Garg and other distinguished speakers.

Dr. Ahirwar discussed the expectations of Indian citizens from the railway system, emphasizing the growing demand for improvements in both passenger services and freight operations. He explained how Indian Railways is continuously working to meet these expectations by modernizing its infrastructure and introducing innovative technologies.

He touched upon the Railway Bill that has been introduced in Parliament for the amendment of the Railway Act**,** aiming to streamline and update the legal framework governing Indian Railways. He highlighted that this legislative reform is critical for the ongoing transformation of the railway sector and its alignment with modern needs.

Dr. Ahirwar further discussed the importance of the Dedicated Freight Corridor (DFC) project, which is being developed by the Ministry of Railways. This ambitious project involves building new railway lines dedicated exclusively to freight traffic, which will significantly improve the efficiency and speed of freight movement across the country.

He acknowledged the challenges faced by Indian Railways, especially in terms of technology adoption and meeting the growing demands of the passenger segment. He stated that one of the biggest challenges for Indian Railways is addressing the dilemmas in the freight segment, particularly the low modal share of rail freight compared to other modes of transport.



Dr. Ahirwar also discussed the significance of the **PM Gati Shakti Master Plan**, which aims to enhance **infrastructure connectivity** across India.

He highlighted the inclusion of the **Energy, Mineral, and Cement Corridor**, one of the three economic railway corridors under the **PM Gati Shakti National Master Plan (NMP)**. This plan is designed to facilitate seamless connectivity across sectors and boost economic growth through improved logistics and transportation networks.

He emphasized the importance of **integrating rail and road** networks to enhance connectivity to the **hinterlands** and increase **last-mile connectivity** for cargo. He further noted that improving the rail freight sector is crucial for reducing transportation costs and increasing the efficiency of goods movement across the country.

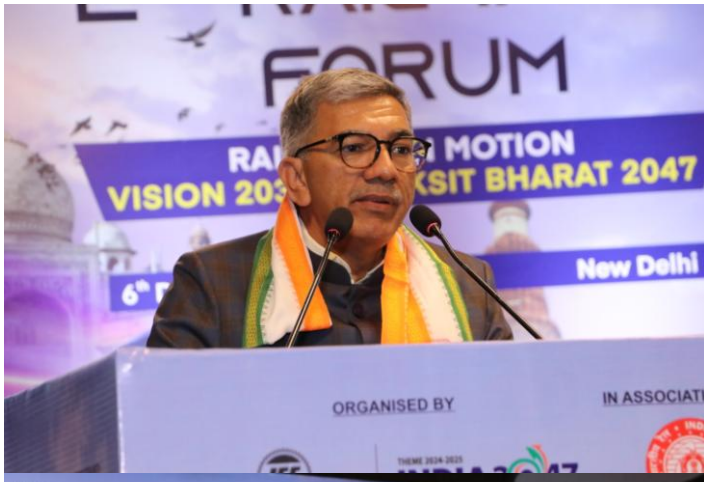
Dr. Ahirwar concluded his address by wishing the conference great success and expressing his gratitude to all the speakers for their valuable contributions to the future of Indian Railways.

CHIEF GUEST ADDRESS BY PROF. (DR.) MANOJ CHOUDHARY, Vice Chancellor, Gati Shakti Vishwavidyalaya,

Prof. (Dr.) Manoj Choudhary began his address by thanking ICC for organizing the conference and highlighting the transformative changes happening in India under the leadership of **PM Narendra Modi**. He pointed out how the nation is rapidly progressing, particularly in terms of economic growth and technological advancements.

He discussed several key areas contributing to this growth, such as:

- **Per capita income increase**, reflecting India's rising economic prosperity.
- The shift towards a **knowledge-driven economy**, exemplified by global e-commerce giants like **Amazon** and **Flipkart**, which are contributing to India's tech ecosystem.



Prof. Choudhary also spoke about the evolving role of Indian Railways (IR), emphasizing both its passenger and freight functions. He touched on the importance of subsidies in ticketing and the ongoing redevelopment of stations to enhance passenger experience and infrastructure.

He stressed the critical role of freight traffic in driving economic growth, noting that the efficient movement of goods by rail is vital for reducing costs and boosting industry productivity.

Prof. Choudhary mentioned how Indian Railways is integral to the daily lives of millions of Indians across various sectors. He highlighted key technological innovations such as double-stack technology and the ongoing efforts to modernize the track lanes.

He also discussed the importance of asset management in Indian Railways to maintain and maximize the lifespan of infrastructure, ensuring long-term sustainability.

In the technological realm, Prof. Choudhary touched on the advancements in smart factory automation and the Kavach safety system. He raised a significant concern about how long India can continue to protect its intellectual properties and called for more focus on innovation and protection of technology.

He further discussed the potential of hydrogen-based trains, noting that while such innovations are being discussed, the real challenge lies in the implementation and execution of these projects.

Prof. Choudhary then posed an important question about the future of the Gati Shakti University, asking what specific requirements the industry and the rail sector have, and how the university can help fulfill those needs. He acknowledged **Siemens**' sponsorship of scholarships for female students at the

university, aimed at preparing the next generation of women leaders in the rail industry. He also mentioned that other companies are following suit, supporting the development of a skilled workforce for the future.

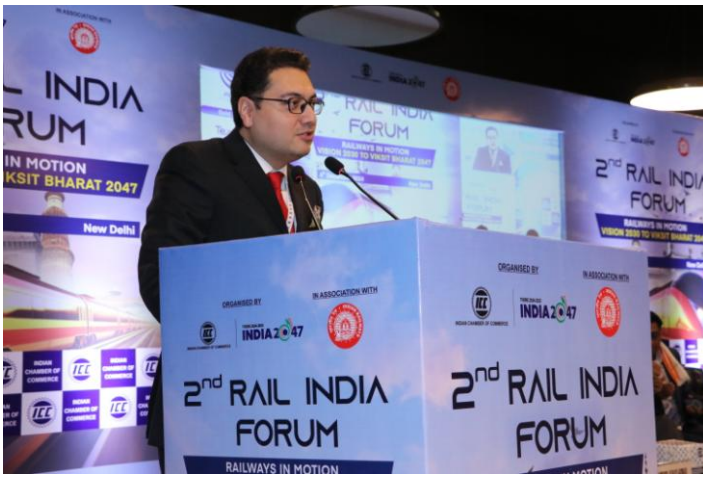
He emphasized that the **university** is now actively contributing to bridging the gap between education and industry, ensuring that its students are ready to meet the sector's evolving demands.

Prof. Choudhary concluded by expressing his eagerness for continued **collaboration between industry, academia, and Indian Railways**. He stressed that collaboration is the only way forward to achieve success, reduce costs, and ensure that projects are effectively directed and monitored.

He ended his speech with a call to action: **"What can we do differently to drive success and progress in the railway sector?"**

MR. KANISHKA SETHIA, Chairman of the National Logistics & Supply Chain Committee, ICC, and CEO of Western Carriers (I) Ltd.

Mr. Kanishka Sethia delivered the vote of thanks, highlighting key aspects of the discussions and emphasizing the importance of the freight sector in shaping the future of Indian Railways. He talked about the need to address the decline in rail freight volume and the efforts required to increase rail freight's market share, which is crucial for supporting the nation's growing economic demands.



Mr. Sethia also touched upon the significance of the Multimodal Cargo Terminal Policy and how it will help in enhancing the overall efficiency of cargo transportation. He pointed out that this policy, along with the ongoing development of National Rail Plan (NRP) and Dedicated Freight Corridors (DFC), specifically the East and West corridors, will help to streamline freight movement across the country.

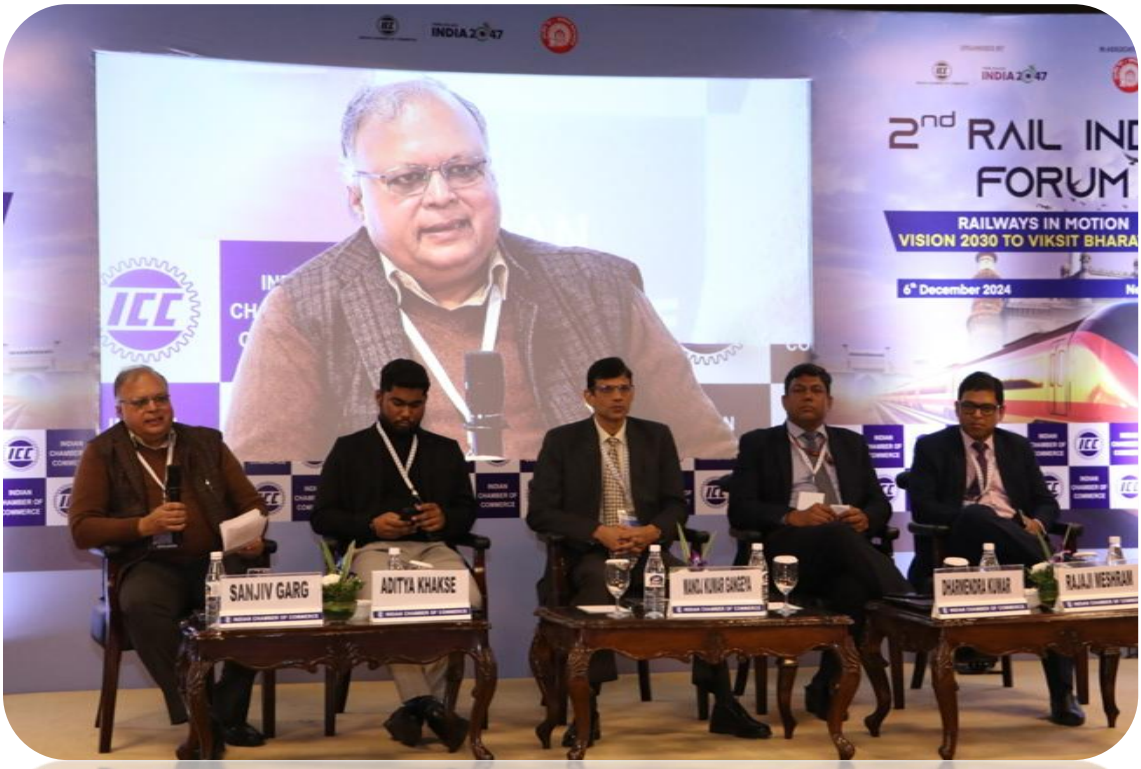
He further discussed the Amrit Bharat Station Scheme, an initiative by Indian Railways aimed at modernizing railway stations and improving the passenger experience. He mentioned that the ongoing work across various stations under this scheme will ensure more comfortable, safer, and more efficient travel for millions of passengers.

Mr. Sethia concluded by acknowledging the contributions of all the speakers and participants, expressing his gratitude for the insights shared during the conference. He thanked everyone for their active participation and wished them success in their respective endeavors.

Panel Discussion on
Transforming Connectivity in Modernizing Indian Railways

Introduction and Address by Session Moderator:

MR. SANJIV GARG, IRTS, CMILT, Secretary General of The Chartered Institute of Logistics & Transport – India, Former Managing Director of Pipavav Railway Corporation Limited, and Former Additional Member of the Railway Board.



In this session we are discussing several important issues, including opportunities for station modernization, transforming the passenger experience, expanding connectivity in remote regions, the impact of high-speed trains on regional growth, and how to improve the operating ratio of Indian Railways. Additionally, we will explore whether Indian Railways should continue cross-subsidizing passenger traffic from freight traffic.

These are some kind of the issues we hope to discuss, and I'm sure our speakers will touch on some of these. However, before we begin, I would also like to mention some of the challenges faced by Indian Railways. We often hear about the positive aspects in the media or on the floor of Parliament, so I won't repeat all the good things about Indian Railways.

I would like to highlight some of the challenges faced by Indian Railways.

One of the biggest challenges is the ***extremely high operating ratio*** of Indian Railways. If you refer to the Indian Railways year book, the official figure for the operating ratio is shown to be around 98. This means that for every 100 rupees earned, 98 rupees are spent. However, I would like to caution you that this figure of 98 itself is somewhat questionable. In my opinion, the actual operating ratio of Indian Railways is much higher, likely in the range of 125 to 130. This discrepancy arises because certain statistical data or expenditures are not included, which is why the ratio is reported as being below 100.

So, it's a very big challenge, and I believe one of the key focus areas for Indian Railways will have to be addressing this issue. We are probably only avoiding bankruptcy because taxpayers come to our rescue and finance whatever is happening beyond this 100.

Another challenge that has persisted for over 50-60 years is the ***cross-subsidization of passenger traffic by freight revenue.*** As you may know, the Railway Minister mentioned in Parliament that for every 100 rupees earned from passenger kilometers, only 54 rupees are recovered. This means the remaining 46 rupees are met from other sources. The main revenue source for Indian Railways is freight traffic, which is more profitable. For every 100 rupees spent on hauling one net ton kilometer, the recovery is almost 175 rupees. However, we are overpricing freight and under pricing passenger traffic.

As a result, whenever you sell something much cheaper than its market rate or input cost, demand will always be higher. Conversely, if you overprice something, traffic will naturally shift to other competitive modes, primarily roads.

In the case of freight traffic, a lot of high-value traffic has been diverted from Indian Railways to other competing modes of transport, mainly road transport, due to the overpricing. Similarly, by under pricing passenger traffic, we find that even passengers who need to travel just 25-30 km find state bus transport to be more expensive than Indian Railways. This leads to overcrowding on short-distance passenger trains, which affects the movement of long-distance rail traffic, both freight and passenger. In effect, we are inverting the pyramid and causing all the associated problems with this kind of pricing mechanism.

The Railway Minister also announced in Parliament that the passenger subsidy due to the cross-subsidization of passenger traffic amounts to 57,000 crore rupees annually, which is a significant sum. On the other hand, freight—the bread and butter of Indian Railways—tends to take a back seat, as 80-90% of the management's time is spent on issues related to passenger traffic, while less than 20% is dedicated to freight. From a corporate perspective, this means the main revenue stream of Indian Railways isn't getting the attention it deserves from top management.

Looking at the expenditure side, out of every 100 rupees spent by Indian Railways, 60-65 rupees go towards paying salaries, and 30 rupees go towards the energy bill. This leaves barely 5-10 rupees for other expenses, including capital expenditure, which is a major concern. I'm highlighting these issues, and perhaps our speakers would like to shed light on them as well.

Another challenge is the ***fall in the average lead of freight traffic***. While we should have expected the average lead of freight traffic to increase, it has actually been declining in recent years. A similar issue on the freight side is the *over-dependence on just four or five commodities* that make up the entire freight basket. About 48% of the freight basket consists of coal, 10% is cement, 5% each is food grains and iron/steel, and fertilizers make up 4%. This means that just 5 or 6 commodities account for 85% of the freight traffic, which is a major concern, particularly problematic because, as we know, the Government of India is committed to reducing dependence on fossil fuels for energy generation. Consequently, thermal power plants, which were previously located hinterland, are now being phased out as they reach the end of their coal supply life.

These plants are being relocated near ports or pits. Therefore, demand for coal transportation will significantly decrease over the next 5-10 years, which could cause coal's share in the freight basket to drop from 48% to around 25% or even less depending on how fast the hinterland base thermal power plants closed down.

The commodities mentioned above—**coal**, **cement**, **food grains**, **iron/steel**, and **fertilizers**—are unlikely to fill this gap, the only one is the 'container' which is again a very big challenge as the current share of container traffic is barely 5 to 7 % increasing it substantially is very big challenge and unless Indian Railways start planning for this shift in modal traffic towards containers, it will become very difficult at a later stage.

So, when we talk about reducing logistics costs, these are the kinds of issues that we need to tackle. Unless we increase the modal share of freight in rail transport and shift container traffic to Railways, any talk about reducing logistics costs will be meaningless.

Therefore, Indian Railways not only has to talk about shifting modal traffic to Railways, but we also have to examine how to address first-mile and last-mile connectivity issues for this shift in modal traffic can be tackle

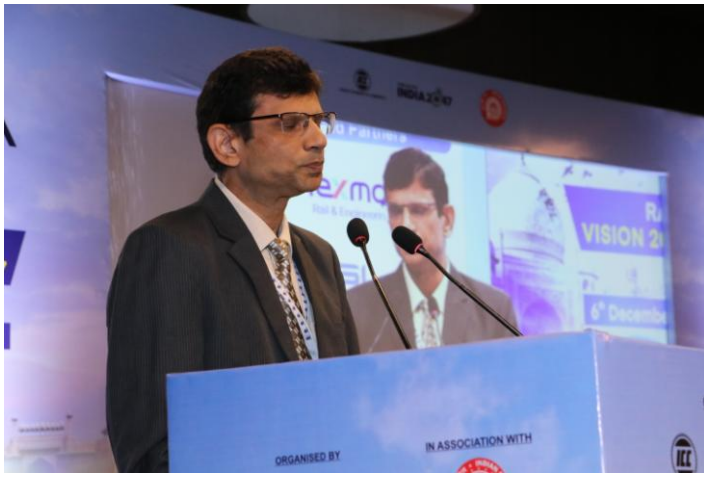
A very positive development for Indian Railways in the last 5 to 10 years has been the astronomical increase in capital expenditure. 10 year ago the capital expenditure, which was in the range of 50,000 to 70,000 crores annually, has now gone up to more than 250,000 crores annually. This significant increase has coincided with the merger of the Railway budget into the General Budget, so you can say the General Budget is now financing a large part of the capital expenditure for Indian Railways.

The National Rail Plan aims to increase the overall annual freight traffic moving by rail from the current 1,500 million tons to nearly 3,000 million tons in the next 5 to 10 years. How this will be achieved remains a significant challenge. Now, I will hand over to the individual speakers.

Mr. Garg concluded his address by inviting Mr. Manoj Gangeya, who is responsible for planning at Indian Railways, to share his insights on how Indian Railways plans to tackle the challenges ahead.

MR. MANOJ KUMAR GANGEYA, Executive Director Planning, Railway Board, Ministry of Railways, Government of India

Mr. Manoj Kumar Gangeya discussed several key initiatives and the vision for Indian Railways, focusing on the country's economic growth and infrastructure development. He highlighted the projected growth of India's GDP by 2047 and the expected increase in per capita income, emphasizing the importance of modernizing infrastructure to support this growth.



Mr. Gangeya stressed the significance of long-distance passenger travel and how different segments of the railway network must be developed to cater to diverse customer needs. He discussed the Ministry of Railways' ongoing efforts to enhance the passenger experience, including the introduction of **Vande Bharat Express** trains, particularly in **Madhya Pradesh**, where there is high demand for such services. He also talked about the Ministry's focus on enhancing services for various passenger segments, including the introduction of **non-AC trains** aimed at making rail travel more affordable for the lower-income group.

In terms of sustainability, Mr. Gangeya touched upon the Indian Railways' ambitious target of achieving **100% electrification** of its network in the coming years. He emphasized the commitment to **net-zero carbon emissions** by leveraging renewable energy sources. The goal is to make Indian Railways more environmentally friendly and aligned with global climate goals.

Overall, Mr. Gangeya's address was centered on improving the customer experience across all passenger segments while ensuring sustainable and efficient growth for Indian Railways.

MR. RAJAJI MESHRAM, Consultant, Asian Development Bank, Ex-Partner, EY

Started thanking ICC, for inviting him to speak today, It's truly an honor to be here with such a distinguished audience. I would like to start by posing a critical question: How do we transform connectivity in light of the policy changes that are essential to drive progress?

We often hear about the two kinds of interventions: the hard interventions and the soft interventions. And when we talk about transformation, especially in the context of railways, the immediate response tends to focus on hard interventions—double tracks, expanding infrastructure, increasing capacity—things that can be seen and measured. However, I believe this is only part of the story. My own thoughts on this revolve around the broader question: **What about the transformation that can happen through policy changes?**

It's easy to get obsessed with large-scale transformations and investments, but we must not overlook the potential of smaller, incremental policy changes. Sometimes, it's not about simply investing vast sums of money; it's about how we think about the rules, regulations, and frameworks that guide these investments. For example, why are we always so focused on large-scale transformation? Why don't we pay attention to the smaller changes that can make a significant difference, particularly when it comes to increasing traffic, such as better coordination with neighboring countries or regions?

In this context, there is a critical need for local insights to drive the transformation process. We often overlook the ideas and feedback from the ground level, where the real action is happening. Higher officials, who make critical decisions, may not always be aware of the issues at the grassroots level. It's vital that we listen to the people in the field—those closest to the daily challenges and operations—because they often have the most practical and valuable solutions.

Lastly, I want to emphasize the role of data mining in this transformation. The potential for data-driven decision-making is immense. By harnessing the power of data, we can unlock new ways of improving operations, making better policy decisions, and ultimately transforming connectivity in a more efficient and sustainable way.

Thank you once again for this opportunity. Let's continue to think about how we can bring about meaningful change—both through large and small interventions, and with a strong focus on data and policy transformation.

MR. DHARMENDRA KUMAR, Director- Operations, Centre of Railway Information Systems

He began his speech by recalling the questions posed by Dr. Ahirwar to the Vice Chancellor of Gati Shakti Vishwavidyalaya in the first session. One of the key questions was: 'Who will drive the transformation and how?

The simple answer, **'we have to do'** by collectively, and the **'How' should be determined by the esteemed gathering present.**

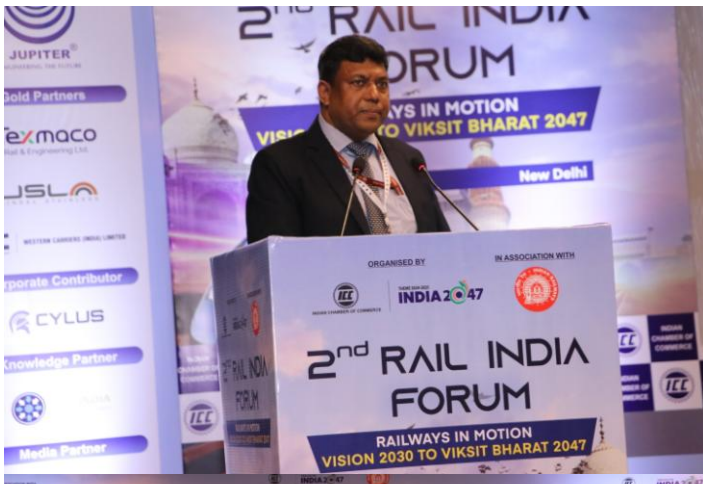
One of the main areas of focus should be efficiency improvement. However, the most crucial aspect is the enhancement of the customer experience. This involves both those responsible for delivering services to the public and the internal teams managing operations.

Infrastructure development is being addressed by the government through adequate financial arrangements, which have grown fivefold in the last five years. This progress is being well-managed, and we need to meet the goals set for the next five years, with targets aimed for 2047.

Sustainability of the entire process is key to ensuring long-term success.

He also discussed the enhancement of customer experience, an initiative that is already in progress and being managed by CRIS (Centre for Railway Information Systems). He further touched upon the history of CRIS and its role in this transformation.

CRIS (Centre for Railway Information Systems) plays a pivotal role in the modernization and digital transformation of Indian Railways. Established in 1986, CRIS is responsible for developing and implementing IT solutions that enhance the operational efficiency of the railway system. It has been instrumental in the development of key initiatives like the Passenger Reservation System (PRS), freight management systems, and the train tracking system, all of which contribute significantly to improving the customer experience. CRIS also works on projects related to automation, ticketing, and real-time data services, supporting the broader goal of creating a more efficient, sustainable, and customer-friendly railway system. Its efforts are aligned with the broader vision of transforming Indian Railways into a modern, tech-driven transport network.



We are striving to achieve the best possible customer experience, with a major focus on ongoing digital transformation. In the passenger segment, we are handling 28,000 bookings per minute, and on the freight side, we have successfully achieved 99% digital transactions. For passengers, we have already reached 85% digital bookings, and our target is to hit 90%, leaving only 10% for counter bookings. The emphasis remains on customer satisfaction, which is driving the revamping of both passenger and freight operations.

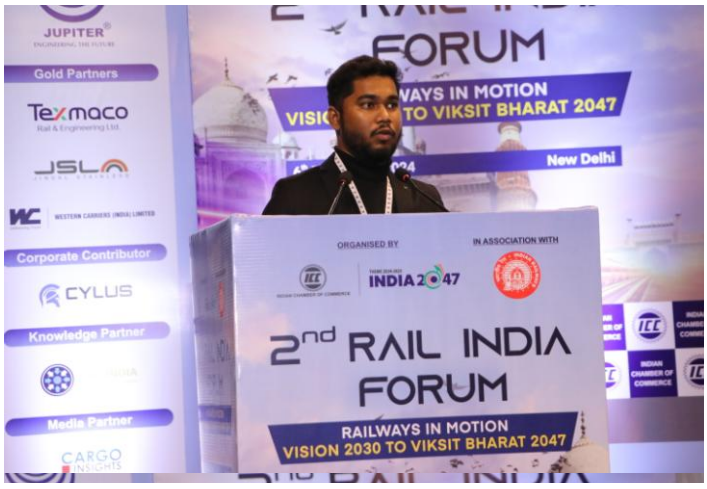
To enhance the customer experience further, we are incorporating GPS-enabled devices that provide real-time train tracking information, offering passengers more accurate and timely details. Additionally, we are planning to launch a new platform, called '**SuperApp'** within the next three months, where both freight and passenger data will be integrated, enabling customers to access all relevant details in one place. This initiative will leverage a range of advanced technologies, including AI, to improve service delivery and make the system more transparent and efficient for all users.

He concluded his talk by emphasizing the significant role that the IT revolution has played in the transformation of Indian Railways so far, and assured that it will continue to drive progress in the future. He expressed his gratitude to ICC and others for the invitation and support, and formally ended his address.

MR. ADITYA KHAKSE, Business Head, Tutr Hyperloop

He began his talk by introducing himself as a product of Gati Shakti Vishwavidyalaya, and then he started PowerPoint presentation to shared insights about Tutr Hyperloop, a project incubated at the Indian Institute of Technology Madras (IITM), India's top technology university and home to the largest startup ecosystem in the country. Tutr Hyperloop operates out of the IITM Research Park, which serves as a hub for advanced deep-tech startups emerging from India. The company aims to leverage its partnership with IIT Madras and its co-location with the largest deep-tech ecosystem in India to develop cost-effective Hyperloop technologies that can enhance revenues across various industries by addressing their pain points related to the movement of goods.

The founding team of Tutr Hyperloop has significant experience in automotive and aerospace technologies, with a proven track record of building and scaling businesses. They are collaborating with several end-users, including Ports, Mining Industries, and Logistics Service Providers, to create customized solutions that meet their specific needs.



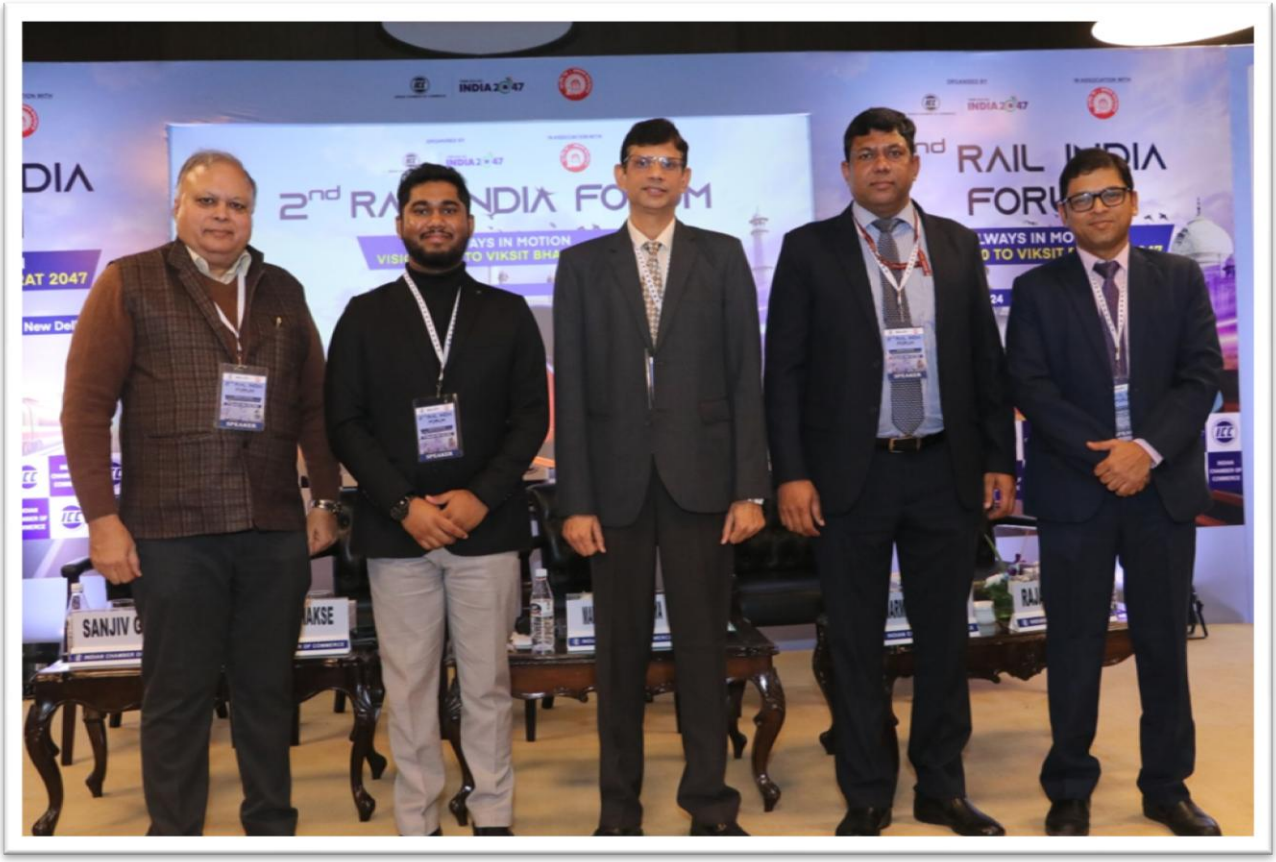
He also discussed Avishkar Hyperloop, a student team from IIT Madras formed in 2017 with the goal of participating in global Hyperloop competitions. Under the guidance of Prof. Satya Chakravarthy, the team has made significant strides in product development and has filed multiple patents. In the 2021 European Hyperloop Week, they won the award for the most scalable design. To accelerate product development and commercialization, Tutr Hyperloop is being incubated at the IIT Madras Incubation Centre.

He mentioned that the project is in its final stages, with some R&D work remaining, which will be completed by February 2025. Tutr Hyperloop also has plans to organize a global Hyperloop competition outside Europe in 2025, to be held in Asia, where teams from around the world will participate.

A key point he highlighted was the standardization of Hyperloop technology, as it is still a new field. He emphasized the opportunity to set the global standards for Hyperloop technology here in India, with the goal of leading the way and encouraging the rest of the world to follow India's lead.

In conclusion, he urged industries involved in this area to come together and support the advancement of this transformative technology, driving it forward to new heights.

The First Panel discussion concluded after a brief Q&A, where the audience had the opportunity to ask questions, and the speakers provided insightful answers. This interactive exchange wrapped up the session, leaving participants with a deeper understanding of the potential and progress of Hyperloop technology and its impact on various industries.



Panel Discussion on
Railway Renaissance: Rail Infrastructure Development & Investment Pathways

MR. NITIN KULSHRESTHA, Chief Operating Officer of GATX India

The session began with an introduction by the session moderator, **Mr. Nitin Kulshrestha**, Chief Operating Officer of **GATX India**. He briefly set the stage for the discussion, highlighting the importance of rail infrastructure development in transforming the sector and addressing the investment needs crucial for modernization. Mr. Kulshrestha kept his role focused on moderating the discussion

and introducing the distinguished panelists, allowing them to share their expertise and insights on the key issues, challenges, and opportunities in the rail industry.

The panelists explored various investment pathways and strategies required to modernize India's rail infrastructure, touching on topics such as technology integration, public-private partnerships, and sustainable growth in the railway sector.

- **MR. SAJAL MITTRA**, Head of Railways at Adani Cement, spoke about the critical role of sustainable infrastructure and investments in the development of India's railway sector. He highlighted various challenges faced on a daily basis within the industry but also focused on the positive strides being made, particularly in the development of the **Eastern Corridor** and **Western Corridor** projects. Mr. Mittra shared insights into significant infrastructure milestones like the **Chenab Rail Bridge** and the **Hydrogen Engines High-Speed Rail Project**, both of which represent groundbreaking innovations in railway technology.

  He also conveyed that As conveyed by Mr. Sajal Mittra, Railway routes with capacity constraints face significant challenges, particularly impacting freight traffic. Furthermore, in the freight sector, BCN wagons are often given priority over open wagons, leading to delays in the availability of critical wagons required for factory and production operations.

  Additionally, during festive seasons, a substantial portion of railway crew and engines is diverted to passenger services, which further disrupts freight traffic. To address these disruptions, many private factories strategically divide their freight contracts between railways and road transport, rather than relying exclusively on the railways, ensuring continuity of operations during such periods.

  He acknowledged, however, that these developments, while impressive, still do not fully address the immense demand for freight and passenger services in the country. Mr. Mittra underscored the importance of long-term returns on investments in such large-scale projects and their potential for transformative impact on the sector. He concluded his address by reaffirming that the **private sector** is fully aligned with Indian Railways in these efforts, emphasizing the need for continued collaboration to drive the sector's modernization forward.

- **MR. PANKAJ KUMAR AGARWAL**, AVP & Zonal Head **at** Jindal Stainless, discussed the role of material innovations in building a more robust rail infrastructure. He began by addressing the challenges raised by Mr. Sajal Mittra, particularly the issues that slow down the progress of the railway sector and hinder its ability to modernize at the desired pace. Mr. Agarwal pointed out that various obstacles prevent the railway sector from advancing quickly and efficiently, ultimately affecting the delivery of quality infrastructure.

  He emphasized the importance of delivering high-quality materials and adding value to the infrastructure. Mr. Agarwal highlighted that focusing solely on cost may not always be the best approach, as it could compromise the long-term sustainability and safety of the projects. He advocated for a more balanced strategy that ensures both cost-effectiveness and the use of superior materials and technology to enhance the overall railway system.

Comparing the approval processes of the Ministry of Railways and the Ministry of Road Transport and Highways, Mr. Agarwal noted that the latter is more efficient. He explained that the railway approval process involves multiple agencies, requiring additional clearances from the RDSO (Research Designs and Standards Organisation), which makes it more time-consuming.

Additionally, Mr. Agarwal stressed the importance of togetherness and trust among industry partners. He called for an integrated approach, where stakeholders collaborate to make decisions that drive the transformation of the sector. He also emphasized the need for courage in the decision-making process, urging the industry to make bold, forward-thinking choices that will shape the future of rail infrastructure.

- **MR. JAYANT SINGH**, Programme Director for RD/Tourism & Culture/Tpt-infra II at NITI Aayog**,** Government of India, began his address by thanking Mr. Garg and Mr**.** Meshram for their remarks and emphasizing the points raised by the previous speakers. He acknowledged that private sector investment is present, but questioned what is holding back the full potential of these investments. He highlighted the demand that exists but isn't being fully realized.

  Mr. Singh discussed the concept of **privatization**, referencing **Mr. Garg's** earlier comments on **Public-Private Partnerships (PPP)**. He also brought up the **CAG report of 2014**, which analyzed why the railways' PPP model had not achieved the expected outcomes. According to the report, there were significant issues with implementation and execution that hindered the success of these partnerships.

  He pointed out that the **Indian Railways** has **four joint secretary-level officers** and an **additional secretary** specifically focused on PPP initiatives, yet questioned why the required synergy isn't happening. He raised this as an important issue to address, asking why despite having dedicated leadership and resources, the desired outcomes in the PPP sector have not been realized.

  Mr. Jayant Singh emphasized the need to **empower railway zones** to make independent decisions, particularly to enhance the execution of **Public-Private Partnership (PPP)** projects. He pointed out that while the **Model Concession Agreement (MCA)** provides a structured framework for such projects, its implementation has faced challenges. By decentralizing decision-making to the zones, it would allow for faster, more efficient project execution, tailored to local needs. He raised concerns about the gaps between private sector expectations and the regulatory framework, questioning why the intended synergy hasn't been fully realized despite the clear guidelines provided by the MCA.

  At the end, Mr. Jayant Singh acknowledged that while progress has been made, the sector has been taking 'baby steps' in addressing these issues. He emphasized that the time has now come to accelerate progress in a faster and more substantial manner. He called for a shift in mindset, urging stakeholders to move beyond incremental changes and focus on driving rapid, transformative improvements in the railway sector.

- **MR. KANISHKA SETHIA**, Chairman, National Logistics & Supply Chain Committee, ICC & CEO, Western Carriers (I) Ltd

  Mr. Kanishka Sethia, Chairman of the National Logistics & Supply Chain Committee at ICC and CEO of Western Carriers (I) Ltd, began his address by emphasizing the importance of numbers in understanding the state of the railway sector. Drawing on his background as an economist, he highlighted that "numbers never lie" and aimed to leave the audience with significant figures to consider, particularly regarding rail infrastructure development and investment pathways.

  He acknowledged the valuable insights shared by previous speakers and kept his presentation brief. Focusing on the financial landscape, Mr. Sethia stressed the critical role of financing for Indian Railways, a massive sector crucial to the nation's economy. He outlined the Gross Revenue Receipts (GRR), which grew by 5.9%, reaching ₹2,40,000 crores, encompassing freight traffic, passenger traffic, coaching earnings, and sundry rentals. Despite the growth, the wage bill—now totaling ₹1,61,000 crores after an 8.7% increase—places significant strain on the system. This expense is a major factor in the cross-subsidization of passenger services by freight revenues, with freight, particularly coal, contributing a large portion of the income.

  Mr. Sethia emphasized the burden of this financial structure, pointing out that Indian Railways charges only ₹45 for a ticket, even though the actual cost is around ₹100. This highlights the financial challenges of maintaining operations. He also noted efforts to enhance freight operations through initiatives like the Dedicated Freight Corridors (DFC) and improvements in train arrival consistency.

  Additionally, Mr. Sethia stressed the importance of safety and technology in modernizing Indian Railways. He outlined initiatives aimed at improving safety, such as the elimination of level crossings and the implementation of automatic block signaling to improve train operations. He also mentioned the use of Kavach, India's indigenous train collision avoidance system, which provides real-time alerts to train operators to prevent accidents. Furthermore, the RRSK (Railway Safety and Security) Fund, allocated with ₹1 lakh crore, focuses on enhancing railway safety and infrastructure through advanced technologies.

  The introduction of technologies like Kavach and automatic signaling systems plays a crucial role in improving safety and operational efficiencies by automating key processes and enhancing overall rail traffic management.

  Mr. Sethia ended by highlighting that while financial and operational challenges remain, Indian Railways is committed to advancing its infrastructure, improving freight services, and adopting cutting-edge safety technologies. He emphasized the importance of a balanced approach that incorporates both financial sustainability and technological innovation to create a modern, efficient, and safe rail system for the future.

Panel Discussion on Railway Renaissance: Rail Infrastructure Development & Investment Pathways also concluded after an engaging Q&A session and announcement of lunch break

During a Q&A session, a CILT consultant raised a concern about the Dedicated Freight Corridor (DFC). While DFC is seen as a game-changer for railways, its authorities lack their own train crew and rely on Indian Railways for staffing. This dependence could limit DFC's operational autonomy and efficiency, suggesting the need for a dedicated crew system to enhance accountability and performance.

Last week, during the railway union elections, many trains were left idle at stations due to a shortage of crew, as they were occupied with voting. To prevent such disruptions in the future, the railways should consider implementing a system of postal voting for the crew. This would ensure smooth train operations without compromising the voting rights of the staff.

The Chairman of the panel conveyed that the concerned matter would be forwarded to the Ministry of Railways for further action.

Panel Discussion on
Sustainable Technology & Innovation in Railways 2.0

The final panel discussion, moderated by Mr. Ashish Upadhyay *(*Director, Cylus), focused on the latest technological innovations and sustainable solutions for the future of Indian Railways.

MR. ASHISH UPADHYAY set the tone for the discussion by posing a series of thought-provoking questions to the panelists.

Question: How do you see technology driving Indian Railways' goals for sustainability, efficiency, and world-class operations? What has been the most transformative technological development in railways over the past decade?

Answer (by Mr. Harshkumar Bajpeyee, Managing Director of **Schwihag India Pvt Ltd)**

In response, Mr. Harshkumar Bajpeyee, emphasized the importance of adopting technology for sustainable growth. He highlighted Schwihag India's contributions to improving rail track performance through advanced maintenance and monitoring solutions. These innovations help enhance efficiency,

reduce environmental impact, and ensure more reliable operations for Indian Railways. He also pointed out that the results of **L1** selection must focus on quality products and technology, as only high-quality solutions can ensure long-term sustainability, rather than relying solely on the tendering process.

Question: As RailTel is driving transformation, particularly in enhancing efficiency and world-class operations, how do you see technology contributing to this process and the overall sustainability of Indian Railways?

Answer (by Mr. Anshul Gupta, Advisor, RailTel Corporation, Ministry of Railways, Government of India):

He answered by informing that he was involved in the National Rail Plan (2019-2020) and the 'New India, New Rail' plan, both of which focus on making Indian Railways world-class. Technology plays a pivotal role in this transformation. By integrating AI, automation, and data analytics, we can streamline operations, reduce downtime, and optimize resources. Additionally, RailTel is working with Cylus in the cyber security domain to ensure safety across four critical aspects: functional safety, operational safety, asset safety, and staff safety. This collaboration helps protect the railway infrastructure from cyber threats. Furthermore, the emphasis on electrification and green technologies promotes sustainability by reducing carbon emissions. Technology, in this context, is crucial not only for operational excellence but also for ensuring the long-term success and sustainability of Indian Railways as a world-class network.

Question: To Lt. Col Alok Shankar Pandey, Group General Manager (IT) & CISO, Dedicated Freight Corridor Corporation of India

With your defense background and current role, what is your perspective on the technological advancements being implemented on the Western and Eastern freight corridors?

In his Answer **Mr. Alok Shankar Pandey** presented his thoughts as a tech enthusiast, having been exposed to the ecosystem for almost five years. He emphasized the importance of collaborating with the industry, leveraging existing technologies in the ecosystem, and leaving specialized tasks to those who excel at them daily. He believes a connected environment with connected trains is the way forward. However, he also pointed out that legacy systems are holding back progress due to reluctance in adopting new technologies. Key challenges include planning, network traffic, and the lack of operational independence. Despite having the best minds and technology available, he believes that standardization remains a major hurdle. He concluded by stressing the high importance of cyber security in operating these technologies.

Question: As India is currently the fifth-largest economy and is moving towards becoming the third-largest, with a potential four trillion-dollar economy, how do you see cyber security playing a role in safeguarding the new systems as we converge IT and OT domains in the digitalization process? Specifically, with the introduction of systems like Kavach and Vande Bharat operations

What is the basic difference between IT and OT, and how should security measures be implemented?

Answer (by Mr. Eddy Thesee, Vice President & Cyber Platform, Alstom Group)

Cyber security plays a key role in improving operational efficiency and performance, especially as we address climate change by implementing sustainable technologies. By leveraging Bennett technologies and strengthening security measures, we can ensure the safe and efficient operation of systems like Kavach and Vande Bharat, while optimizing environmental and operational outcomes. IT (Information Technology) and OT (Operational Technology) must be secured differently, with IT focusing on data management and OT on controlling physical systems.

Question: What key challenges should customers consider when implementing and maintaining cyber security, particularly in the context of global threats?

Answer (by Mr. Amir Levintal, Chief Executive Officer, Cylus)

There are multiple aspects to consider when it comes to security. Forty to fifty years ago, we didn't fully understand how to implement safety or establish standards to make trains safe. Over time, safety standards became norms, but the trust in technology was still limited. In India, as it undergoes its biggest transformation, it is crucial to replicate the concept of safety across all systems. Cybersecurity and safety, while both critical, are two distinct areas that must be handled separately to ensure the protection and reliability of railway operations.

Question: Overall, from a governance perspective, what do you think are the bottlenecks in the adoption of innovative technologies in Indian Railways?

Short Answer (by Mr. Anshul Gupta):

The main bottleneck in adopting innovative technologies in Indian Railways is liberating the mindset. There is resistance to change, especially when moving away from legacy systems. This cultural shift is crucial, and overcoming this resistance through training and awareness will enable faster adoption. Additionally, reducing procurement lifecycle times will play a significant role in facilitating the implementation of new solutions.

Question: What is your vision for creating sustainable railway infrastructure that aligns with India's goals for faster rail movement and overall environmental sustainability?

Answer (by Ranit Rana, Associate Vice President, Jindal Stainless)

Creating sustainable railway infrastructure involves building durable and efficient systems that align with India's goals for faster rail movement and environmental sustainability. The use of high-grade steel in rolling stock ensures better durability, lightweight design, and enhanced efficiency. Hydrogen-powered trains are also being explored for cleaner, more sustainable rail travel. Additionally, adopting a life-cycle costing approach helps reduce long-term expenses while improving performance and longevity. Refining the Public-Private Partnership (PPP) model is essential for making these advancements scalable and sustainable.

He also emphasized the need to reduce the tare weight of railway wagons by 2 to 3 metric tons. Similarly, efforts should be made to decrease the weight of containers. These measures would significantly enhance the efficiency and performance of the Indian Railways.

Question: How is your new technology helping operators in terms of reducing asset life costs and ensuring longer sustainability?

Answer (by Harshkumar Bajpeyee, Managing Director, Schwihag India Pvt Ltd)

Our technology helps reduce legacy costs by optimizing the maintenance and performance of rolling stock, such as Vande Bharat, and track infrastructure. By improving the efficiency and longevity of assets, we lower the overall cost of ownership and ensure more sustainable and cost-effective operations over time. The vision of our company is to never compromise on the quality of materials supplied. We believe that delivering high-quality products is essential for long-term sustainability and performance. If margins are too low, it becomes difficult to maintain this standard, as quality should always remain a priority to ensure the durability and reliability of the infrastructure.

The emphasis on L1 (lowest financial bidder) is leading to a deterioration in the quality of railway infrastructure and equipment. Priority should be given to technical quality during the procurement process, with financial bidding considered only after ensuring adherence to high technical standards. This approach will help the railways acquire more efficient and reliable equipment.

Question: From RailTel's perspective**, how is RailTel contributing to the digitalization of Indian Railways? Also, what is your view on the upcoming modern technologies that will transform Railways in the next 5 to 10 years?**

Answer (by Mr. Anshul Gupta, Advisor, RailTel Corporation, Ministry of Railways, Government of India)

RailTel has been an integral part of Indian Railways for over 30 years, contributing significantly to its digital transformation. It's not just about the L1 principle; we focus on delivering quality solutions that align with the broader goals of safety and efficiency. For instance, with the introduction of Kavach 4.0, we are enhancing train safety, but we must also consider whether complete digitalization 5.0 is necessary, taking into account factors like track conditions and operational needs. Indian Railways' primary goal is to achieve zero accidents and zero failures, and all technology implementations must work towards achieving these ambitious targets while ensuring the safety and reliability of the network.

Question: In the past sessions, we learned about the integration of IoT devices, sensors, and advanced technologies that are becoming part of Indian Railways. However, there are challenges in this interconnected world.

Can you share your views on these challenges and how Indian Railways should address them while implementing new technologies?

Answer (by Mr. Amir Levintal, Chief Executive Officer, Cylus)

The integration of IoT devices and advanced technologies into Indian Railways offers benefits but also raises safety and cybersecurity challenges. The growing number of connected devices increases entry points for cyber threats. To mitigate these risks, Indian Railways must adopt a comprehensive cybersecurity approach, ensuring continuous monitoring, addressing vulnerabilities proactively, and using technologies like AI and machine learning for threat detection. Striking a balance between embracing new technologies and prioritizing security is crucial for safer, more efficient rail systems.

As systems become more digitized and complex, the likelihood of misconfigurations, often due to human error, increases. Incident response systems, for example, become more intricate, which also heightens the potential for mistakes. Protecting against threats should be a joint goal.

Question: How can rail operators balance simplifying architectures with the implementation of advanced security tools?

Answer (by Mr. Eddy Thesee, Vice President & Cyber Platform, Alstom Group)

Innovation and sustainability are the foundation of our long-lasting products. By leveraging systems engineering, machine learning, and AI, we ensure that our solutions are not only advanced but also resilient and sustainable. These technologies enable us to optimize performance, reduce environmental impact, and enhance safety, ensuring that the systems we develop stand the test of time. Through continuous innovation, we aim to create solutions that contribute to the future of sustainable rail transport.

This panel discussion and conference concluded after an engaging Q&A session, where the audience had the opportunity to ask questions.

This interactive segment allowed attendees to explore the topic of 'Sustainable Technology & Innovation in Railways 2.0', delving into key issues surrounding the adoption of innovative technologies, sustainability, and the future of the railway sector.

Report Prepared By

Knowledge Partner

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