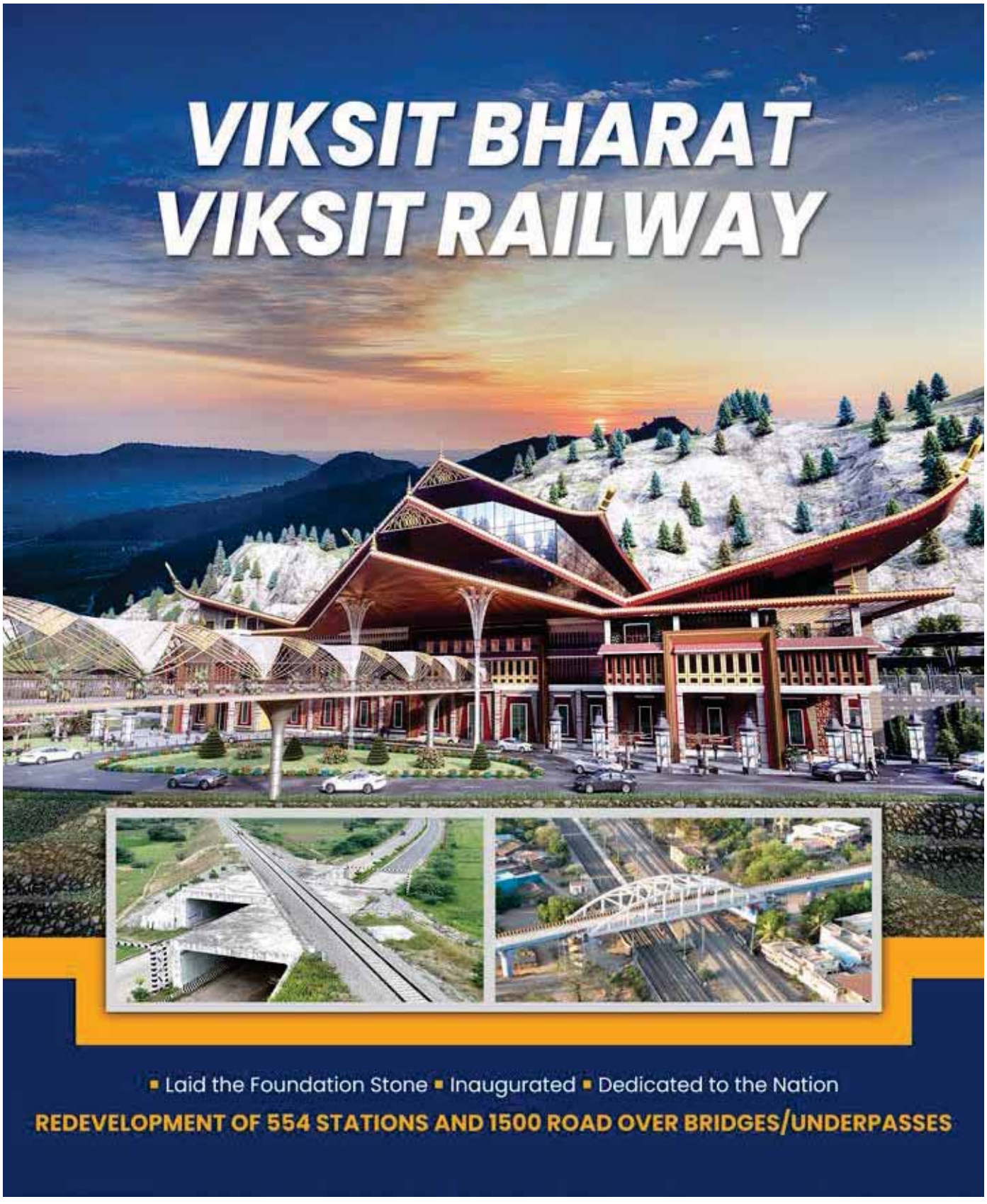
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Editorial



The day of 26th February, 2024 has been engraved in golden letters in the Railways history. On this historic day, amidst much anticipation and fervour, the Hon'ble Prime Minister, Shri Narendra Modi laid the foundation stone for the redevelopment of 553 railway stations and inaugurated 1500 road over bridges and under bridges, through video conferencing. These transformative endeavours will cost approximately ₹40,000 crore, a testament to the nation's commitment to modernization and progress. Hon'ble PM also dedicated to the nation the redeveloped Gomtinagar Railway Station at a cost of approximately ₹385 crore.

Many projects in Indian Railways like Mumbai-Ahmedabad High Speed Rail Project, Dedicated Freight Corridor, Udhampur-Srinagar-Baramulla Rail Link, Pamban Bridge, redevelopment of 1318 railway stations will provide impetus to the country's economy. While preparing these world-class projects, the vision of the next 50 years has been kept in mind. Today, India is being considered the most attractive place for investment all over the world. A major reason for this is the world class infrastructure being built in India.

'Just as interest is earned on money deposited in banks, similarly every penny spent on infrastructure creates new sources of income and new employment', the Hon'ble Prime Minister emphasized, noting that laying of new rail lines creates multiple employment opportunities, be it a labourer or an engineer. He further added that possibilities for new jobs are created in many industries such as cement, steel and transport. 'Lakhs of crores of rupees being invested today is a guarantee of thousands of jobs', in his address, the Hon'ble Prime Minister hailed the program as a symbol of New India's dynamic work culture. 'Whatever India does today, it does it on an unprecedented speed and scale. We dream big and work tirelessly to realize them. This resolve is visible in this Viksit Bharat Viksit Railway programme', he proclaimed.

1318 railway stations across India under 'Amrit Bharat Station Scheme' are not merely undergoing a facelift, but are being transformed into world-class hubs while cherishing their local heritage—a fusion of modernity and tradition. Remarkably, what takes a decade or more in other countries is being accomplished by Indian Railways in a fraction of that time—just 3 to 4 years—without disrupting rail operations.

Lakhs of people connected with the Viksit Bharat Viksit Railways event from 500 railway stations and 1500 other venues. Shri Ashwini Vaishnaw, Minister of Railways and Smt. Darshana Jardosh, Minister of State for Railways were present at the Rail Bhawan and Governors and Lt. Governor of 20 States and UTs, 11 CMs, 8 Deputy CMs, 14 Ministers of Central Government, 26 Ministers of State, 156 Ministers of various State Governments, around 1500 MPs and MLAs and other dignitaries were present at the various railway stations or participated in the programme through video conferencing.

Please share your feedback with us.

HISTORICAL CONTEXT



Hon'ble Prime Minister

Laid the Foundation Stone, Inaugurated and dedicated to the Nation More than

2,000

Railway Infrastructure Projects Worth around

₹41,000 cr.

Laid the Foundation Stone for Redevelopment of

553

Railway Stations under 'Amrit Bharat Station Scheme' at a cost of over

₹19,000 cr.

Laid the Foundation Stone, Inaugurated and dedicated to The Nation

1500

Road Over Bridges and Underpasses across the country at a cost of around

₹21,520 cr.

Inaugurated Redeveloped

Gomti Nagar

Railway Station



> "Whatever India does today, it does it on an unprecedented speed and scale. We dream big and work tirelessly to realize them. This resolve is visible in this Viksit Bharat Viksit Railway program"
>
> — Hon'ble Prime Minister **Shri Narendra Modi**

The Hon'ble Prime Minister, Shri Narendra Modi on 26th February, 2024 laid the foundation stone and inaugurated and dedicated to the Nation around 2,000 railway infrastructure projects worth more than ₹41,000 crores via video conferencing. Lakhs of people connected with the Viksit Bharat Viksit Railways event from 500 railway stations and 1500 other venues.



Shri Ashwini Vaishnaw, Minister of Railways and Smt. Darshana Jardosh, Minister of State for Railways attended the function through video conferencing wherein Governors/CMs and huge number of people connected with the Viksit Bharat Viksit Railways event from 500 railway stations and 1500 other venues

Speaking on the occasion, the Hon'ble Prime Minister said that today's programme is a symbol of the new work culture of New India. 'Whatever India does today, it does it on an unprecedented speed and scale. We dream big and work tirelessly to realize them. This resolve is visible in this 'Viksit Bharat Viksit Railway programme', he said. He mentioned the scale that has gained unprecedented momentum recently. He mentioned his Jammu and Gujarat events of the last few days from where he launched massive expansion of education and health sector infrastructure. Similarly, today also, 550 stations in 12 states spread over 300 districts are being revamped. Talking about Gomti Nagar station project in Uttar Pradesh, more than 1,500 roads and overbridge projects Hon'ble PM Modi underlined the scale and speed of the ambition and resolve of new India.

The Hon'ble Prime Minister said that today projects worth ₹40,000 crores are seeing the light of day and recalled initiating the Amrit Bharat Station project a few months ago where work to modernize 500 railway stations in the country had begun. He underlined that today's event takes this resolve even further and provides a glimpse of India's pace of progress. Hon'ble Prime Minister congratulated the citizens of India for the railway projects of today.

Hon'ble PM specially congratulated the Yuva Shakti of India for today's development project as they are the real beneficiaries of Viksit Bharat. He said that the development projects of today will create employment and self-employment opportunities for lakhs of youth, while also benefit those studying in schools. 'Youth have the maximum right to decide how Viksit Bharat will unfold', Hon'ble PM exclaimed. He expressed gratitude towards the youth for bringing the dreams of railways in Viksit Bharat to reality through various competitions and also congratulated the winners. He assured the youth that their dreams and hard work along with the Hon'ble Prime Minister's resolve make for the guarantee of Viksit Bharat.



The Hon'ble Prime Minister expressed happiness that the upcoming Amrit Bharat Stations will be symbols of both Vikas and Virasat. He informed that Baleshwar Station in Odisha is designed on the theme of Bhagwan Jagannath Temple and Sikkim's Rangpur will carry the imprint of local architecture, Sangner Station in Rajasthan displays 16th-century hand-block printing, the Station at Kumbakonam in Tamil Nadu will display Chola influence and Ahmedabad Station is inspired by Modhera Surya Mandir, Dwarka Station is inspired by the Dwarkadheesh Temple, IT City Gurugram station will carry the IT theme, meaning 'Amrit Bharat Station will introduce the specialities of that city to the world', the Hon'ble Prime Minister said. These stations will be Divyang and senior citizen-friendly.

Hon'ble Prime Minister reiterated the creation of a Viksit Bharat in the last 10 years, especially in Railways where the change is apparent. He observed that in the last 10 years, facilities which were once far-fetched have now become a reality and gave the example of Modernized Semi High-Speed trains like Vande Bharat, Amrit Bharat, NaMo Bharat, the fast pace of electrification of rail lines, and cleanliness inside trains and on the station platforms. He drew a comparison on how unmanned gates were commonplace in Indian Railways whereas overbridges and underbridges have ensured uninterrupted and accident-free movement today. He also mentioned that modern facilities similar to those in airports are now being made available to the poor and middle class at the railway stations.

The Hon'ble Prime Minister said that today's Railway is becoming a mainstay of ease of travel for the citizens. Further commenting on the transformation of Railways, the Hon'ble Prime Minister said as the economy jumps to 5th place in global ranking from 11th, there is a massive increase in the railway budget from ₹45,000 crore 10 years ago to ₹2.5



Shri Ashwini Vaishnaw, Minister of Railways after the event detailed about the Railway Infrastructure Projects at the press conference held at Rail Bhawan

lakh crore now. 'Just imagine how much our strength will increase when we become the third largest economic superpower in the world. Therefore, Hon'ble PM is working hard to make India the third largest economy in the world as soon as possible', he added.

Hon'ble PM also credited saving of money due to absence of scams and the saved money being used in doubling the speed of laying new lines, taking rails to new areas from Jammu and Kashmir to the Northeast, and working on 2,500 km dedicated freight corridor. He said that every paisa of taxpayers' money is being used for the welfare of the commuters. He said that there is a 50 percent discount on every railway ticket by the government.

'Just as interest is earned on money deposited in banks, similarly every penny spent on infrastructure creates new sources of income and new employments', the Hon'ble Prime Minister emphasized, noting that laying of new rail lines creates multiple employment opportunities, be it a





labourer or an engineer. He further added that possibilities for new jobs are created in many industries and shops such as cement, steel and transport. 'Lakhs of crores of rupees being invested today is a guarantee of thousands of jobs', Hon'ble PM exclaimed. He also spoke about the 'One Station One Product' programme where products by small farmers, artisans, and Vishwakarma friends are being promoted by the Railways through thousands of stalls set up at the stations.

'Indian Railways is not just a passenger facility but is also the biggest carrier of India's agricultural and industrial progress', the Hon'ble Prime Minister remarked, noting that a faster train will save more time in transportation while also reducing industry costs. Hence, giving impetus to Make in India and Atmanirbhar India. Crediting India's modern infrastructure, the Hon'ble Prime Minister hailed the nation as the most attractive place for investment all over the world. The Hon'ble Prime Minister concluded his address by showing the way for the next 5 years and said that the capacity of Indian Railways will increase when these thousands of stations are modernized, bringing a revolution of huge investment.

Inaugurated Gomti Nagar Station

The Hon'ble Prime Minister inaugurated Gomti Nagar Station in Uttar Pradesh, redeveloped at a total cost of around ₹385 crores. To cater to the increased future passenger footfall, this station has segregated arrival and departure facilities. It integrates both sides of the city. This centrally air-conditioned station has modern passenger amenities like Air Concourse, congestion free circulation, food courts and ample parking space in upper and lower basements.

Amrit Bharat Station Scheme

'Amrit Bharat Station scheme' for development of Stations on Indian Railways. So far, 1318 number of stations have been identified for development/ redevelopment under 'Amrit Bharat Station scheme'. This scheme envisages development of stations on a continuous basis with a long term approach. It involves preparation of Master Plans and their implementation in phases to improve the amenities at the stations like improvement of station access, circulating areas, waiting halls, toilets, lift/escalators as necessary, cleanliness, free Wi-Fi, kiosks for local products through schemes like 'One Station One Product', better passenger information systems, executive lounges, nominated spaces for business meetings, landscaping etc. keeping in view the necessity at each such station.

The scheme also envisages improvement of building, integrating the station with both sides of the city, multimodal integration, amenities for Divyangjans, sustainable and environment friendly solutions, provision of ballast less tracks, 'Roof Plazas' as per necessity, phasing and feasibility and creation of city centres at the station in the long term.



Hon'ble PM Dedicated to the Nation and Laid the Foundation Stone of Railway Projects in Odisha



Hon'ble Prime Minister, Shri Narendra Modi laid the foundation stone of Railway Projects in Sambalpur, Odisha along with Governor of Odisha, Shri Raghubar Das, Chief Minister of Odisha, Shri Naveen Patnaik, Union Minister of Education and Skill Development, Shri Dharmendra Pradhan and Minister of Railways, Shri Ashwini Vaishnaw

The Hon'ble Prime Minister, Shri Narendra Modi on 3rd February, 2024 laid the foundation stone of Railway projects worth about ₹2146 cr. in Sambalpur, Odisha.

The Hon'ble Prime Minister dedicated to the nation a 50 km long second track of Jharsuguda-Barpali-Sardega rail line Phase-1 built by Mahanadi Coalfields Limited, with an investment of ₹878 cr. He also inaugurated new rail line from Jhar-Tarbha to Sonpur section. He laid the foundation stone for the redevelopment of Sambalpur railway station, whose architecture is inspired by the Sailashree Palace.

He also dedicated the Sambalpur - Talcher Doubling Railway Line (168 km) and Jhartarbha to Sonepur New Railway line (21.7 km), enhancing the rail network capacity in the region. The Hon'ble Prime Minister also flagged off Puri-Sonepur-Puri Weekly Express, improving connectivity for the rail passengers in the region.■

Hon'ble PM Laid the Foundation Stone for Redevelopment of Ratlam and Meghnagar Railway Station



Hon'ble Prime Minister, Shri Narendra Modi laid the foundation stone for the redevelopment of Ratlam and Meghnagar railway station along with Governor of MP, Shri Mangubhai C. Patel, CM of Madhya Pradesh, Shri Mohan Yadav and Minister for Tribal Affairs, Shri Arjun Munda.

The Hon'ble Prime Minister, Shri Narendra Modi on 11th February, 2024 laid the foundation stone of multiple rail projects. These include laying of foundation stone for the redevelopment of Ratlam railway station and Meghnagar railway station in Jhabua, Madhya Pradesh. These stations will be redeveloped under the Amrit Bharat station scheme. The rail projects dedicated to the nation include projects for doubling of Indore - Dewas - Ujjain C cabin railway line, Itarsi - North – South grade separator with yard remodelling and third line connecting Barkhera-Budni-Itarsi. These projects will help strengthen rail infrastructure and reduce travel time for both passenger and goods trains. ■



Hon'ble Prime Minister Laid the Foundation Stone for Eight Railway Projects in Rajasthan

The Hon'ble Prime Minister, Shri Narendra Modi on 16th February, 2024 through video conferencing laid the foundation stone of eight important railway projects of Rajasthan worth around ₹2,300 cr. The rail projects dedicated to the nation include various projects for the electrification of rail routes including Jodhpur-Rai Ka Bagh-Merta Road-Bikaner section (277 km), Jodhpur-Phalodi section (136 km) and Bikaner-Ratangarh-Sadulpur-Rewari section (375 km).

The Hon'ble PM also dedicated to the nation, 'Khatipura railway station'. The railway station is developed as a satellite station for Jaipur and is equipped with 'terminal facility' where trains can originate and terminate. The rail projects whose foundation stones were laid by the Hon'ble PM are the maintenance facility of Vande Bharat sleeper trains at Bhagat Ki Kothi (Jodhpur), maintenance of all types of rakes like Vande Bharat, LHB etc. at Khatipura (Jaipur), construction of coach care complex for maintenance of trains at Hanumangarh and doubling of Bandikui to Agra Fort rail line will ease access to Mehndipur Balaji and Agra.

Governor of Rajasthan, Shri Kalraj Mishra, Chief Minister Rajasthan, Shri Bhajan Lal Sharma, other Ministers of the Rajasthan government, MPs, MLAs and local level representatives also joined the occasion.■

Hon'ble PM Laid the Foundation Stone and Dedicated to the Nation Multiple Railway Projects in Haryana

The Hon'ble Prime Minister, Shri Narendra Modi on 16th February, 2024 laid the foundation stone and dedicated to the nation multiple railway projects in Rewari, Haryana. The projects whose foundation stones were laid include the doubling of the Rewari-Kathuwas rail line (27.73 km), doubling of the Kathuwas-Narnaul rail line (24.12 km), doubling of the Bhiwani-Dobh Bhali rail line (42.30 km) and doubling of Manheru-Bawani Khera rail line (31.50 km). The Hon'ble PM also dedicated to the nation the Rohtak-Meham-Hansi rail line (68 km). He also flagged off train service in the Rohtak-Meham-Hansi section, which will improve rail connectivity in Rohtak and Hisar region benefiting the rail passengers.■



Hon'ble Prime Minister, Shri Narendra Modi flagged off train service in the Rohtak-Meham-Hansi section. Governor of Haryana, Shri Bandaru Dattatreya and Chief Minister of Haryana, Shri Manohar Lal Khattar also attended the function.



Hon'ble Prime Minister Flagged off First Electric Train in Jammu and Kashmir

Hon'ble Prime Minister, Shri Narendra Modi on 20th February, 2024 dedicates New Rail Line between Banihal – Khari – Sumber - Sangaldan section (48 km.) and electrification of Baramulla- Srinagar-Banihal – Sangaldan section to nation flagged off the Kashmir's first electric train in Kashmir Valley and train service between Sangaldan – Baramulla (from Srinagar station). In a significant step towards upgrading and strengthening the civic and urban infrastructure across Jammu and Kashmir, Hon'ble Prime Minister Shri Narendra Modi dedicated to the nation the new rail line between Banihal-Khari-Sumber-Sangaldan (48 km worth ₹15,863 cr.) and the newly electrified Baramulla-Sringar-Banihal-Sangaldan section (185.66 km worth ₹470.23 cr.). Hon'ble Prime Minister also flagged off the first Electric Train in the valley and train service between Sangaldan and Baramulla station (from Srinagar station) through video conferencing from Jammu on 20th February, 2024.

Lieutenant Governor of Jammu and Kashmir, Shri Manoj Sinha, Minister of State for Minister of State for Prime Minister's Office, Dr Jitendra Singh. Shri Jugal Kishore, MP (Lok Sabha) and Shri Gulam Ali Khatana, MP (Rajya Sabha) and other local representatives were present on the occasion.

Speaking on the occasion, the Hon'ble Prime Minister said that development works are taking place simultaneously in the entire country. The Hon'ble Prime Minister mentioned the increased connectivity to Jammu and Kashmir. He mentioned the expansion work of Jammu Airport, connecting Kashmir to Kanyakumari by rail, and the flagging off of trains running from Srinagar to Sangaldan and Sangaldan to Baramulla. 'The day is not far when people will be able to travel across the country by taking a train from Kashmir', Hon'ble PM Modi affirmed. Speaking about the huge campaign of electrification of Railways underway in the country, the Hon'ble Prime Minister congratulated the people of Jammu and Kashmir on getting the first electric train 20th February, 2024.

Referring to modern trains like Vande Bharat the Hon'ble Prime Minister said Jammu Kashmir was selected among the initial routes of the trains. He said two Vande Bharat trains are running in Jammu and Kashmir and access to Mata Vaishno Devi has improved.

The commissioning of the Banihal-Khari-Sumber-Sangaldan section is significant as it features the usage of Ballast Less Track (BLT) all along the route providing a better riding experience to the passengers. Also, India's longest transportation tunnel T-50 (12.77 km) lies in this portion between

Khari-Sumber. The rail projects will improve connectivity, ensure environmental sustainability and boost the overall economic development of the region.

USBRL Project, which spans through challenging terrain of Pir Panjal Ranges and it aims to establish an all-weather comfortable, and economically feasible transportation network with rest of the country. of the total 272 km USBRL Project (with ₹41,119 cr. project cost), 161 km has already been commissioned so far and 48 km. between Banihal-Sangaldan has been commissioned.

Currently, the diesel run trains operate on Baramulla-Banihal section (138 km) and with the new line becoming operational, commuters can now travel by train from Baramulla to Sangaldan. Railways will script a new history of trains running on clean fuel in the Valley which has 20 stations on this section. Today's initiatives will propel holistic development in Jammu and Kashmir.

RCF Kapurthala Built 3 Phase MEMU

The coaches of 3 Phase MEMU (Main Line Electrical Multiple Units) have stainless steel body designed for service speed of 110 kmph. Ethernet based Train Control & Management system (TCMS) has been provided which offer precise train control besides RDM (Rescue Drive Mode) feature which limits the train speed in case of any failure in Train Network. The Driving Coach has Aerodynamic Nose front with air conditioned Driver's cab and ergonomically designed Driver Desk. Low maintenance is the key feature of these coaches.

The 3 Phase MEMUs not only excel in technical brilliance but provides excellent passenger amenties too. Each coach has aesthetic interiors with FRP paneling, cushioned seats, wider windows, sliding doors, Mobile charging sockets. Energy efficient LED light fittings have been provided in each coach with 50% Emergency Lights.

GPS based PAPIS (Public Address & Passenger Information System) comprising of screen displays and loud speakers in each coach facilitates passengers regarding stations onway. For secure travel, CCTV surveillance system with networking features has also been incorporated. Two Lavatories with Bio Toilets are also provided in each coach. Each Driving Coach can carry 226 passengers while trailer coaches can carry 325 passengers. Hitherto, 504 MEMU coaches have been manufactured in RCF since then and are in service on IRs network.■

Hon'ble PM Dedicated to the Nation

Various Rail Projects in Tamil Nadu

Hon'ble Prime Minister, Shri Narendra Modi on 28th February, 2024 dedicated to the nation rail projects for doubling of Vanchi Maniyachchi - Nagercoil rail line including the Vanchi Maniyachchi - Tirunelveli section and Melappalayam - Aralvaymoli section. Developed at the cost of about ₹1,477 cr., the doubling project will help in reducing travel time for the trains heading towards Chennai from Kanyakumari, Nagercoil and Tirunelveli.

The electrification and doubling of rail lines will further improve connectivity between south Tamil Nadu and Kerala and will also ease the congestion in Tirunelveli and Nagercoil sectors. The Hon'ble Prime Minister informed that in the last 10 years, 1,300 km long rail projects were undertaken in Tamil Nadu. 2,000 km of railway electrification was achieved, creation of underpass and the upgradation



Hon'ble PM, Shri Narendra Modi dedicated to the nation various rail projects. Governor of Tamil Nadu, Shri R N Ravi, Union Minister for Ports, Shri Sarbananda Sonowal and Union Minister of State, Dr L Murugan were present

of many railway stations was done. He said five Vande Bharat trains are running in the state providing world-class travel experience.■

Hon'ble Prime Minister Dedicated to the Nation Rail Projects in Gujarat

Hon'ble Prime Minister, Shri Narendra Modi on 22nd February, 2024 laid the foundation stone for railway gauge conversion projects in Surat, Vadodara and Panchmahal.

He Dedicated Udhna - Surat 3rd line (2.65 km) ₹34 cr. Foundation stone laid in Kosamba – Umarpada Gauge Conversion (69.7 km) ₹468 cr. and Samalaya - Timba Road Gauge Conversion (53.53 km) ₹670 cr. He also laid the foundation stone for Railway projects in Tarab, Mahesana, Gujarat and dedicated to the nation, multiple projects for rail line doubling, gauge conversion and new broad-gauge line in districts of Mahesana and Banaskantha.

Hon'ble Prime Minister Dedicated Radhanpur to Samakhiali (134.30 km) Section doubling (part of Palanpur - Samakhiali (247.73 km) doubling Project) ₹1520 cr., Mahesana- Jagudan Gauge Conversion section (9.87 km) (Part of Ahmedabad – Mahesana gauge conversion Project) ₹108 cr., Mahesana-Jagudan (10.89 km) new BG Line ₹99 cr., Mahesana-Bhandu Moti Dau (8.89 km) Doubling (Part of Mahesana - Palanpur Doubling project.) ₹98 cr., electrification of Mahesana- Viramgam - Samakhiali section (263 Rkm) ₹531 cr.



Hon'ble PM, Shri Narendra Modi laid the foundation stone and dedicated various rail projects in Gujarat. CM of Gujarat, Shri Bhupendra Patel, Smt. Darshana Jardosh, MoSR were also present on the occasion

Hon'ble Prime Minister on 25th February, 2024 also dedicated Rajkot-Okha, Rajkot-Jetalsar-Somnath and Jetalsar-Wansjaliya Rail ElectrificationProjects to the nation and also dedicated doubling of Surendranagar- Rajkot Rail line.



Hon'ble Prime Minister, Shri Narendra Modi on 29th February, 2024 via video conferencing dedicated to the nation three railway projects constructed at a cost of more than ₹2200 cr. These include projects third line in Virangana Lakshmibai Jhansi – Jakhlaun & Dhaura – Agasod route, gauge conversion project in New Sumaoli-Jora Alapur railway line, and project for Powarkheda-Jujharpur rail line flover. These projects will improve rail connectivity and contribute to the socio-economic development of the region.



Hon'ble PM Dedicated to the Nation Rail Projects

Worth more than ₹1300 cr. in Maharashtra

Hon'ble Prime Minister, Shri Narendra Modi on 28th February, 2024 laid the foundation stone for railway gauge conversion projects in Yavatmal, Maharashtra.

The Hon'ble Prime Minister also inaugurated multiple rail projects worth more than ₹1300 cr. in Maharashtra. The projects include the Wardha-Kalamb broad gauge line (part of the Wardha-Yavatmal-Nanded new broad gauge line project) and the New Ashti - Amalner broad gauge line (part of the Ahmednagar-Beed-Parli new broad gauge line project). The new broad gauge lines will improve connectivity of the Vidarbha and Marathwada regions and boost socio-economic development. The Hon'ble Prime Minister also virtually flagged off two train services during the program. This includes train service connecting Kalamb and Wardha and train service connecting Amalner and New Ashti. These new train services will help improve rail connectivity and benefit students, traders and daily commuters of the region.

Governor of Maharashtra, Shri Ramesh Bais, Chief Minister of Maharashtra, Shri Eknath Shinde, and Deputy Chief Ministers of Maharashtra, Shri Devendra Fadnavis and Shri Ajit Pawar were present on the occasion among other Members of Parliament, Legislative Assembly, Legislative Council and Government of Maharashtra. Union Minister for Agriculture and Farmers' Welfare, Shri Arjun Munda made his presence virtually.



Hon'ble Prime Minister, Shri Narendra Modi on 23rd February, 2024 laid the foundation stone for ROB on Varanasi- Jaunpur rail section near Babatpur. Chief Minister of Uttar Pradesh, Shri Yogi Adityanath, Deputy Chief Minister of Uttar Pradesh, Shri Brijesh Pathak and Union Minister, Shri Mahendra Nath Pandey were also present on the occasion.

Central Government Approved

6 Multi - Tracking Projects

Across Indian Railways

The Cabinet Committee on Economic Affairs chaired by Hon'ble Prime Minister Shri Narendra Modi approved 6 (six) projects of Ministry of Railways with total estimated cost of ₹12,343 cr. (approx.) with 100% funding from Central Government. The multi-tracking proposals will ease operations and reduce congestion, providing the much-required infrastructural development on the busiest sections across Indian Railways. The projects are in line with Hon'ble Prime Minister Shri Narendra Modiji's vision of a New India which will make people of the region 'Atmanirbhar' by way of comprehensive development in the area which will enhance their employment/self-employment opportunities.

The 6 (six) projects covering 18 districts in 6 states i.e., Rajasthan, Assam, Telangana, Gujarat, Andhra Pradesh and Nagaland will increase the existing network of Indian Railways by 1020 km and will provide employment of about 3 cr. man-days to the people of the States.

The projects are result of PM-Gati Shakti National Master Plan for multi-model connectivity which have been possible through integrated planning and will provide seamless connectivity for the movement of people, goods and services.

These are essential routes for transportation of commodities such as food grains, food commodities, fertilizers, coal, cement, iron, steel, fly-ash, clinker, limestone, POL, container etc. The capacity augmentation works will result in additional freight traffic of magnitude 87 MTPA (million tonnes per annum). The Railways being environment - friendly and energy - efficient mode of transportation, will help both in achieving climate goals and minimizing logistics cost of the country, reduce oil import and lower CO2 emissions.

S.No.	Name of Project	Length in (km)
1	Doubling between Ajmer - Chanderiya	178.28
2	Doubling between Agthori - Kamakhya including Bridge at Saraighat	7.062
3.	Doubling between Jaipur - Sawai Madhopur	131.27
4	Doubling between Lumding - Furkating	140
5	Doubling between Luni - Samdari - Bhildi	271.97
6	Doubling between Motumari - Vishnupuram stations and Rail Over Rail (ROR) at Motumari	88.81 10.87



Lok Sabha Speaker Flagged Off
Kota-Chaumahala-Kota New MEMU Special Train

The Speaker of Lok Sabha, Shri Om Birla flagged off the Kota-Chaumahla-Kota new special MEMU train from Dakaniya Talav Railway Station on 14th February, 2024. Shri Om Birla travelled with the passengers in the same MEMU train up to Ramganjmandi and interacted with the passengers about the railway facilities available for the passengers.



Minister of Culture and Tourism Laid the Foundation
Stone for Komuravelli (H) Railway Station



Shri G. Kishan Reddy, Minister of Culture and Tourism, Development of North East Region laid the foundation stone for the construction of Komuravelli (H) railway station on 15th February, 2024 in the august presence of Shri Mohan Yadav, Chief Minister, Madhya Pradesh, Shri V. Roja Radhakrishna Sharma, Chairperson, Zilla Praja Parishad, Siddipet, Dr. Laxman, MP, Shri Boora Narsaiah, ex MP and Shri Raghunandan Rao, ex MLA. Shri Arun Kumar Jain, General Manager, South Central Railway, Shri Lokesh Vishnoi, and other senior Railway officials were also present.

Chief Minister of Tripura Flagged off the Train
with LHB Rake from Agartala Railway Station

In a bid to further enhance safety and comfort for passengers, the coaches of train No. 15626/15625 (Agartala – Deoghar – Agartala) weekly express has been converted into modern LHB (Linke Hofmann Busch) coaches, equipped with the state-of-art features. Prof. (Dr.) Manik Saha, Chief Minister of Tripura flagged off the train with LHB rake from Agartala Railway Station on 3rd February, 2024.

The newly converted LHB train no. 15626 (Agartala – Deoghar) Express departs from Agartala every Saturday and train no. 15625 (Deoghar – Agartala) Express departs from Deoghar every Monday. Enroute, the train runs via Ambassa, Badarpur Jn., Lumding Jn., Guwahati, Rangiya Jn., New Jalpaiguri, Naugachia, Bhagalpur etc. Conversion of this train to LHB rake provides comfort to the enroute



passengers from northeast who visit to the holy city Deoghar for pilgrimage.

Also, for convenience of the passengers, the train no. 05628/05627 (Agartala – Guwahati – Agartala) special converted to LHB.

Minister of Railways Flagged Off New Balurghat - Sealdah Express





Minister of Railways, Shri Ashwini Vaishnaw flagged off a new daily express train between Balurghat and Sealdah through video conferencing.

The Minister of Railways, Shri Ashwini Vaishnaw flagged off a new daily express train between Balurghat and Sealdah through video conferencing from New Delhi on 1st January, 2024. This new train foster the socio-economic development of the service area. Dr. Sukanta Kumar Majumdar, Member of Parliament of Lok Sabha from Balurghat along with other senior officials from Railways was present at Balurghat station. Shri Khagen Murmu, MP, Smt. Sreerupa Mitra Choudhury, MLA and Shri Gopal Chandra Saha, MLA were present on the occasion and received the train at Malda Town station. In addition to this, Shri Saumitra Khan, MP received the train at Sealdah station on arrival of inaugural Balurghat – Sealdah Express.



Shri Ashwini Vaishnaw, Minister of Railways on 14th February, 2024 reviewed the developmental works and held a meeting with Shri Manoj Sharma, GM, East Coast Railway, Bhubaneswar.

Minister of Railways Launched Annual Capacity Building Plan for Ministry of Railways, Communications and Electronics & IT



Minister of Railways, Shri Ashwini Vaishnaw launched the Annual Capacity Building Plan for Ministry of Railways, Communications and Electronics & IT. Also seen are Smt. Jaya Varma Sinha, Chairman & CEO, Railway Board and senior officials of other Ministries

The Minister of Railways, Shri Ashwini Vaishnaw on 22nd February, 2024 launched the Annual Capacity Building Plan for Ministry of Railways, Communications and Electronics & IT. The annual plan has been crafted for ensuring capacity building and holistic development of manpower keeping in mind National Priorities, Emerging Technologies, Citizen Centricity along with development of organisations, Institutions and Individuals. Staff from Post offices, Railways, BSNL and Common Service Centres (CSC) shared their experiences of iGoT Karmayogi training and how it has helped them develop their capabilities, improve their overall mindset towards their job and enhance their performance and ability to deliver the government's services to the masses in a better manner.

Addressing the august gathering of over 1,000 employees of Railways, Post, CSCs and BSNL at an event in Rail Bhawan, which was also graced by the Chairman & CEO, Railway Board, Secretary, MEITY, Secretary, Department of Post, Secretary, Department of Telecommunication and Chairman of the Capacity Building Commission. Minister of Railways, Shri Ashwini Vaishnaw congratulated all the employees for their good performance in Mission Karmayogi. Shri Vaishnaw said, 'Be it Railways, Post, CSC or BSNL, all are service related departments and service industries require a different mindset as the interaction with customers and stakeholders in continuous and it has a deep impact on the customers and the entire network. Hon'ble Prime Minister Shri Narendra Modi always says, 'Mind is never a problem, mindset is' and therefore, we need to make our mindsets solution oriented. Problems are faced by all but how we find solutions for these problems is important and this makes the difference between success and failure. Our thoughts dominate our action and these actions create our destiny".

The Minister further stated, 'Huge investments are being made in all four departments under the Hon'ble Prime Minister, Shri Narendra Modi led

government and we have long term investment plans as they will lay the foundations for a 'Viksit Bharat' or developed nation. We should keep up the spirit and never be satisfied with our performance and always work towards a higher objective. By 2047 we need to make a 'Viksit Bharat' and we all have to work towards achieving this goal together'.

The Chairman & CEO, Railway Board, Smt. Jaya Varma Sinha said, 'It is a proud moment to be a part of the Annual Capacity Building Plan. Indian Railways, being the largest civil employer, has to have a robust training plan and it is very important to train and enhance capacities for all employees so as to improve our service delivery'. She also thanked the Capacity Building Commission for helping Indian Railways in drafting the capacity building plan. The Annual Capacity Building Plan of Railways has been prepared in partnership with Railway Board, and the main tasks have been identified and competencies and requirements mapped out for holistic development at the individual as well as organizational level.

The Secretary, Department of Telecommunication said, 'We will try to make the training process more dynamic in nature and ensure that it does not remain a one-time exercise. We would like to train people not just for their current work profile but also for services to which they aspire for. We will make the training for vibrant and more role based rather than rule based'.

Secretary, MEITY said this is a detailed exercise down to the lowest level in Ministry. Over 6,000 officers have undertaken 8,000 courses and we are helping create content for the govt. at large. Key outcome has been the training for CSCs. The training has made a significant difference and we will ensure that new courses are added routinely.

The Secretary, Department of Posts asserted, 'Right from the beginning we were involved proactively with training and on 22nd June 2022, we launched a 'Dak Karmayogi Portal' and today we are at a good stage. Over 1.25 lakh staff joined for role based improvement in service delivery through training. We will try to ensure technology enabled workforce keeping in view the national level and ensure there is training on demand through knowledge experts. We have created master trainers and domain experts'.



Shri Ashwini Vaishnaw, Minister of Railways on 23rd February, 2024 inspected the progress of the bullet train project at Vikhroli and Bandra Kurla Complex in Mumbai and during this time he also took stock of India's first 7 km long undersea tunnel and underground station.



Smt. Darshana Jardosh, Minister of State for Railways thanked the people of West Bengal for availing the Howrah - New Jalpaiguri Vande Bharat Express and Howrah - Puri Vande Bharat Express for their regular visit to Darjeeling and Puri, in a review meeting held at Fairlie Place, Eastern Railway Headquarters on 6th January, 2024 with the senior officials of Eastern and South Eastern Railways.

Hon'ble President of India Confers RPSF Constable with 'Jeevan Raksha Padak'



Hon'ble President of India has conferred the prestigious 'Jeevan Raksha Padak' to Railway Protection Special Force (RPSF) constable Shri Shashikant Kumar for the year 2023, on the occasion of Republic Day 2024. His remarkable courage, quick thinking, and prompt action in saving the life of a female railway passenger has earned him this esteemed recognition.

On 8th June, 2023, at Prayagraj Chheoki Railway Station, Sh. Shashikant Kumar demonstrated exceptional bravery when he witnessed a female passenger in grave danger. The passenger was attempting to deboard from a moving train when she slipped and fell into the gap between the train and the platform and was about to come under the wheels of the running train. Without hesitation, Shri Shashikant sprang into action, risking his own safety to save the life of the distressed passenger.

Kumar's swift and decisive intervention prevented a potentially fatal accident, showcasing his dedication to protect the lives of railway passengers. His selfless act reflects the highest ideals of service and commitment to duty upheld by the Railway Protection Special Force. The 'Jeevan Raksha Padak' is a testament to Shri Shashikant Kumar's exemplary courage and steadfast commitment to public safety. His bravery serves as an inspiration to his fellow colleagues and stands as a shining example of the noble values embodied by the RPSF.

Inaugurations done by Different Ministers of State and MPs



The long-cherished demand of the local inhabitants of Madhupur was fulfilled with the extension of 18617/18618 Ranchi – New Giridih Express up to Madhupur. Shri Nishikant Dubey, MP, flagged off the extended run of the train from Madhupur station on 6th January, 2024.■



Eastern Railway introduced a new era of travel comfort for its suburban lady passengers with the launch of two First Class EMU coaches in Matribhumi Local with modified rake, starting service from 28th January, 2024. The inaugural service of this modified Matribhumi Local with First Class coaches between Ranaghat and Sealdah was flagged off by Shri Jagannath Sarkar, MP from Ranaghat station on 28th January, 2024.■



Malda Town – SMVT Bengaluru Amrit Bharat Express was flagged off from its new stoppage at Pakur station on 14th January, 2024 by Shri Amar Kumar Bauri, Leader of Opposition, Jharkhand Legislative Assembly and MLA and Shri Aditya Prasad Sahu, MP.■



Shri R. N. Singh, General Manager, Southern Railway conducted a meeting with MPs belonging to both Lok Sabha and Rajya Sabha, representing constituencies falling under Chennai Division on 19th February, 2024.

The MPs who attended the meeting were Shri Dayanidhi Maran, Shri Kathir Anand, Dr Kalanidhi Veeraswamy, Shri G.Selvam and Shri R. Girirajan.

The MPs were informed about the various works undertaken by Railways in Chennai Division especially in respect of station development, various improvements to passenger services etc. The MPs held discussions on various aspects related to train services, stoppages, passenger facilities, expeditious completion of railway projects, etc.■



Additional stoppage for two minutes has been provided on train no. 13176/13175 Kanchanjungha Express at Bihara station under Lumding Division of N. F. Railway. MP Lok Sabha of Silchar, Dr. Rajdeep Roy flagged off the Kanchanjungha Express with new stoppage at Bihara station on 29th January, 2024.■



On 13th February, 2024, Dr. Jayanta Kr. Roy, MP/Jalpaiguri inaugurated the platform extension work to accommodate Mail/ Express trains facility at New Changrabandha station under Alipurduar Division. MP also inugurated the lift facility at Jalpaiguri Railway station.■



Smt. Jaya Varma Sinha, Chairman and CEO Railway Board presented Vishisht Rail Seva Puraskar and Rail Seva Puraskar on 23rd February, 2024 at Rail Bhawan to 59 Railway Board officers and staff. Also seen are Ms. Roopa Srinivasan, Member Finance, Shri Satish Kumar, Member (T&RS), Shri Anil Kumar Khandelwal, Member (Infrastructure), Ms. Seema Kumar, Member (O&BD) and Ms. Aruna Nayar, Secretary, Railway Board.

READERS

are requested to send their

SUGGESTIONS/FEEDBACK

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Chairman & CEO, Railway Board Conducted Inspection of the Upcoming Pamban Bridge



Smt. Jaya Varma Sinha, Chairman & CEO, Railway Board inspected the upcoming Pamban Bridge

Smt. Jaya Varma Sinha, Chairman & CEO, Railway Board visited Southern Railway on 20th February, 2024 and conducted a window trailing inspection by a special train from Madurai to Mandapam. Shri R.N. Singh, GM/SR, Shri Alok Kumar Mishra ED (Mechanical Transportation), Railway Board, and other officers of Southern Railway accompanied the Chairman & CEO during her inspection.

Smt. Jaya Varma Sinha inspected the upcoming Pamban Bridge structure and held a brief meeting with Rail Vikas Nigam Limited (RVNL) officials and held discussions on the status of the new bridge construction works. Following this, the inspection of Dhanushkodi was done with focus on the scope of Rameswaram-Dhanushkodi new line project. Later, the Chairman & CEO conducted inspection of Rameswaram station redevelopment works and offered suggestions for improvement. On arrival at Madurai, Smt. Sinha conducted a comprehensive review of Madurai Junction redevelopment works.

Smt. Jaya Varma Sinha presided over a review meeting on 21st February, 2024 at Southern Railway Headquarters. Shri R.N. Singh, General Manager, Southern Railway, Shri Kaushal Kishore, Additional General Manager and other senior officials participated in the meeting. The DRMs of Salem, Madurai, Tiruchchirappalli, Palakkad and Thiruvananthapuram joined the review meeting virtually.

During the review meeting, Chairman & CEO held deliberations delving into critical performance indicators like freight loading, operational efficiency, safety, earnings, and infrastructure improvements.



Smt. Jaya Varma Sinha, Chairman and Chief Executive Officer, Railway Board, visited Integral Coach Factory (ICF) on 21st February, 2024 and held discussions with Shri U. Subba Rao, General Manager, ICF, other heads of departments and the representatives of the staff. She also inspected the Vande Metro coaches under development and the coaches for Amrit Bharat Express at the Furnishing Division of ICF.■

Member (Traction & Rolling Stock), Railway Board Visited Integral Coach Factory



Shri Satish Kumar, Member (T&RS), Railway Board visited Integral Coach Factory on 17th February, 2024 and inspected the coaches for Amrit Bharat, Vande Bharat Express and Vande Metro trains under production at ICF. There was a meeting with GM and PHODs to discuss the production of various types of Vande Bharat Express to be designed and developed in future by ICF. The challenges and improvements in the production of the present Vande Bharat Express train were also discussed. He also met the staff representatives to discuss various topics.

Shri Anil Kumar Khandelwal Took Over as Member Infrastructure, Railway Board



Shri Anil Kumar Khandelwal, General Manager of East Central Railway has taken over the charge of Member Infrastructure, Railway Board & Ex-Officio Secretary to the Government of India in the Ministry of Railways on 20th February 2024.

Shri Khandelwal, a 1987 batch officer of the Indian Railway Service of Engineers, holds a Bachelor's degree in Civil Engineering from MNIT, Jaipur and M.Tech from IIT, Roorkee. With over 35 years of invaluable professional experience, Shri Khandelwal has played a pivotal role in the construction and maintenance of the Indian Railways' infrastructure.

Shri. Khandelwal is a well-rounded individual. He has a background in sports, having played basketball at the state level. As the President of Sports for Northern Railway, he led the team to win the prestigious Kaul's Gold Cup for the best sports performance in 2021-22, marking a historic achievement for the Northern Railway.

His commitment to lifelong learning is evident through his participation in strategic management programs at INSEAD, Singapore, ICLIF, Malaysia in 2007, and the Indian School of Business (ISB), Hyderabad. He is also a distinguished fellow and life member of several prestigious institutions.

Director General (HR) Railway Board Visited RDSO



Director General (HR) Railway Board, Shri Naveen Gulati visited RDSO on 22nd February, 2024. Shri Ajay Kumar Rana, Director General RDSO welcomed Shri Naveen Gulati, Director General (HR) Railway Board. During his visit, Shri Gulati reviewed the on-going projects of RDSO and in his address, he gave his valuable suggestions to further upgrade and strengthen this organisation.

Shri Gulati also stressed on the need to take the task of vendor development more seriously and also emphasized on providing more efforts to develop new vendors.

Shri U. Subba Rao, assumed charge as the General Manager of Integral Coach Factory



Shri U. Subba Rao, assumed charge as the General Manager of Integral Coach Factory (ICF), on 1st February, 2024. Shri Rao belongs to the 1987 batch of Indian Railway Service of Mechanical Engineering (IRSME). He is a Graduate in Mechanical Engineering and has done Post Graduate Programme in Public Policy & Management with Indian Institute of Management, Bengaluru.

Before assuming charge as GM/ICF, Shri Rao was holding the office of the Additional General Manager, South Western Railway, Hubbali. He has also worked in various capacities in Railways including Principal Chief Mechanical Engineer of South Western Railway, Chief Mechanical Engineer (Planning) of South Central Railway, Secunderabad, Divisional Railway Manager (DRM) of Salem Division, Southern Railway, Chief Workshop Manager, Coaching Workshop, Mysuru, in South Western Railway, and Chief Workshop Engineer, at the Rail Wheel Factory, Bangaluru.

He has attended the Senior Managers' Programme at Paris and Johannesburg. He was also involved in validation of the EMU Cast Wheels Design at TTCI in the USA.

RAILWAYS IN PARLIAMENT

Minister of Railways, Shri Ashwini Vaishnaw replied to the questions in Parliament.

Commissioning of Kavach



Kavach has so far been deployed on 1465 rkm and 139 locomotives (including Electric Multiple Unit rakes) on South Central Railway.

Presently Kavach tenders have been awarded for Delhi–Mumbai and Delhi–Howrah corridors (approximately 3000 rkm). The progress of main items related to Kavach is as under:

- Laying of Optical Fibre Cable : 3040 km.
- Installation of Telecom Towers : 269 nos.
- Provision of equipment at Stations : 186 nos.
- Provision of equipment in Loco : 170 locos.
- Installation of Track side equipments : 827 rkm.

Kavach system is certified for Safety Integrity Level-4. Further, the certification by Independent Safety Assessor (ISA) is conducted at the time of commissioning, once the whole section is fully equipped and tested.

Works for provision of Intrusion Detection System to prevent accident involving elephants have been commissioned on 48 rkm already identified vulnerable sections over North-East Frontier Railway. Further, based on vulnerability of the locations where elephant movements happen frequently over the tracks, works have also been sanctioned on Indian Railways.

The average punctuality of Mail/Express train services during 2020-21 to 2022-23 was 88.48%.

Railway network on Broad Gauge has been electrified on 61508 rkm (93.83%) upto 31st December, 2023. IR has witnessed reduction in HSD consumption for Diesel locos by 44.64% in the year 2021-22 as compared 2018-19.

About 23000 Conventional Coaches Replaced By LHB Coaches Since 2015



Conventional (ICF) coaches are being replaced by Linke Hofmann Busch (LHB) coaches. Since 2015, about 23,000 conventional coaches have been replaced by LHB coaches. Salient features of LHB coaches include better ride quality index, Centre Buffer Coupler for enhanced safety and anti-climbing features, Axle mounted Disc brake system, Sturdy and robust design to minimize damage and obviating capsizing of coaches during accidents, provision of Bio-toilets, Higher Seating Capacity, Large panoramic windows, FRP (Fibre Reinforced Plastic) panels in AC coaches, Microprocessor controlled AC etc.■

About 94% of Total Broad Gauge Network of the Indian Railways Electrified



Since 2014-15, Indian Railways has completed electrification of about 40,000 rkm on Broad gauge (BG) network. There is substantial jump in electrification from about 1.42 km/day between 2004-14 to about 18 km/day in 2022-23. At present, 61,813 rkm on BG network has been electrified, which is about 94% of the total Broad Gauge (BG) network of the Indian Railways. The electrification of balance BG network has been taken up. During 2014-23, ₹43,346 cr. have been spent on electrification. Further, ₹8,070 cr. have been allocated for electrification during 2023-24.

As on 1st April, 2023, across Indian Railways, 459 Railway Infrastructure projects (189 New Line, 39 Gauge Conversion and 231 Doubling) of total length 46,360 km, costing approx. ₹7.18 lakh cr. are in planning/approval/construction stage.■

Consequential Train Accidents have Declined Over the Years

The average number of consequential train accidents during the period, 2004-14 was 171 per annum, while the average number of consequential train accidents during the period, 2014-23 has declined to 71 per annum.

Consequential train accidents have declined over the years, as shown by the graph below:



The following steps have been taken by the Government to enhance safety and to prevent train accidents:

- Rashtriya Rail Sanraksha Kosh (RRSK) has been introduced in 2017-18 for replacement/ renewal/upgradation of critical safety assets, with a corpus of ₹1 lakh cr. for five years. From 2017-18 till 2021-22, Gross expenditure of ₹1.08 lakh cr. was incurred on RRSK works. In 2022-23, the Govt. extended the currency of RRSK for another period of five years with Gross Budgetary Support (GBS) of ₹45,000 cr.
- Electrical/Electronic Interlocking Systems with centralized operation of points and signals have been provided at 6,521 stations upto 31st December, 2023 to eliminate accidents due to human failure.
- Interlocking of Level Crossing (LC) Gates has been provided at 11,143 level Crossing Gates up to 31st December, 2023 for enhancing safety at LC gates.
- Complete Track Circuiting of stations to enhance safety for verification of track occupancy by electrical means has been provided at 6,558 stations upto 31st December, 2023.
- Detailed instructions on issues related with safety of signalling e.g. mandatory correspondence check, alteration work protocol, preparation of completion drawing, etc. have been issued.
- System of disconnection and reconnection for S&T equipment as per protocol has been re-emphasized.
- All locomotives are equipped with Vigilance Control Devices (VCD) to ensure alertness of Loco Pilots.
- Retro-reflective sigma boards are provided on the mast which is located two OHE masts prior to the signals in electrified territories to warn the crew about the signal ahead when visibility is low due to foggy weather.
- A GPS based Fog Safety Device (FSD) is provided to loco pilots in fog affected areas which enables loco pilots to know the distance of the approaching landmarks like signals, level crossing gates etc.
- Modern track structure consisting of 60 kg, 90 Ultimate Tensile Strength (UTS) rails, Prestressed Concrete Sleeper (PSC) Normal/Wide based sleepers with elastic fastening, fan shaped layout turnout on PSC sleepers, Steel Channel/ H-beam Sleepers on girder bridges is used while carrying out primary track renewals.
- Mechanisation of track laying activity through use of track machines like PQRS, TRT, T-28 etc to reduce human errors.
- Maximizing supply of 130 m/260 m long rail panels for increasing progress of rail renewal and avoiding welding of joints, thereby ensuring safety.
- Laying of longer rails, minimizing the use of Alumino Thermic Welding and adoption of better welding technology for rails i.e. Flash Butt Welding.
- Monitoring of track geometry by OMS (Oscillation

Monitoring System) and TRC (Track Recording Cars).

- Patrolling of railway tracks to look out for weld/ rail fractures.
- The use of Thick Web Switches and Weldable CMS Crossing in turnout renewal works.
- Inspections at regular intervals are carried out to monitor and educate staff for observance of safe practices.
- Web-based online monitoring system of track assets i.e. track database and decision support system has been adopted to decide rationalized maintenance requirement and optimize inputs.
- Detailed instructions on issues related with safety of track e.g. integrated block, corridor block, worksite safety, monsoon precautions etc. have been issued.
- Preventive maintenance of railway assets (Coaches and Wagons) is undertaken to ensure safe train operations and to keep a check on rail accidents across the country.
- Replacement of conventional ICF design coaches with LHB design coaches is being done.
- All unmanned level crossings (UMLCs) on Broad Gauge (BG) route have been eliminated by January 2019.
- Safety of Railway bridges is ensured through regular inspection of bridges. The requirement of repair/rehabilitation of bridges is taken up based upon the conditions assessed during these inspections.
- Indian Railways has displayed statutory 'Fire Notices' for widespread passenger information in all coaches. Fire posters are provided in every coach so as to inform and alert passengers regarding various Do's and Don'ts to prevent fire. These include messages regarding not carrying any inflammable material, explosives, prohibition of smoking inside the coaches, penalties etc.
- Production Units are providing Fire detection and suppression system in newly manufactured Power Cars and Pantry Cars, Fire and Smoke detection system in newly manufactured coaches. Progressive fitment of the same in existing coaches is also underway by Zonal Railways in a phased manner.
- Regular counselling and training of staff is undertaken.
- Concept of Rolling Block introduced in Indian Railways (Open Lines) General Rules vide Gazette notification dated 30th November, 2023, wherein work of maintenance/repair/ replacement is planned up to 52 weeks in advance on rolling basis and executed as per plan.

3,02,550 (Provisional) Candidates Empanelled During the Last Five Years Against Various Group 'C' Posts in Railways

Occurrence and filling up of vacancies are continuous process in Indian Railways considering its size, spatial distribution and criticality of operation. The vacancies are filled up primarily by placement of indents by Railways with Recruitment agencies as per operational requirements. During the process, vacancies may arise and these are filled subsequently.

Two major examinations involving more than 2.37 crore candidates have been conducted recently for filling up 1.39 lakh vacancies. 1st Stage Computer Based Test for CEN 01/2019 (NTPC) for more than 1.26 crore candidates was conducted in 7 phases from 28th December, 2020 to 31st July, 2021 in 133 shifts in 68 days across 211 cities and 726 centers in 15 languages. Similarly CBT for CEN RRC 01/2019 (Level 1) was conducted for more than 1.11 crore candidates in 5 phases from 17th August, 2022 to 11th October, 2022 in 99 shifts in 33 days across 191 cities and 551 centers in 15 languages.

3,02,550 (Provisional) candidates have been empanelled during the last five years (i.e. 2018-2019 to 2022-2023) and current year (i.e. 2023-2024 upto 31st December, 2023), against various Group 'C' posts (including Level 1 and security related posts). Manpower planning requires continuous review of sanctioned strength in view of changing workload conditions, introduction of new technologies, working systems, creation of new assets etc. Work studies are regularly conducted in Railways for various activities. This exercise enables Indian Railways to utilize its human resources in most efficient and productive manner.

Steps Taken by Railways to Prevent Stampedes and Accidents Caused by Overcrowding at Railway Stations



To cater to the needs of passengers and generate additional accommodation for travelling passengers, Indian Railways introduced new services, extended services, increased their frequencies, augments load, which are ongoing processes, subject to operational feasibility, resource availability, competing demands etc. The number of passengers on originating basis during financial year 2022-23 is 639 cr.

In addition, to cater to the extra rush of passengers during festive seasons, vacations etc., operation of special trains and temporary augmentation of trains are also undertaken.

The following steps are taken by the Railways to prevent stampedes and accidents caused by overcrowding at railway stations:-

Railway Protection Force (RPF) staff in coordination with commercial department and Government Railway Police (GRP) are deployed at stations and railway premises for crowd management.

All out efforts are made by RPF for orderly entry of passengers to unreserved coaches during festive season by making queue of passengers on platforms before placement of trains.

Frequent announcements are made through Public Address system for crowd control.

Foot-over-bridges, entry and exit points, platforms etc. are manned by RPF personnel to regulate the movements of passengers in coordination with GRP.

- Trained RPF staff are deployed in Closed Circuit Television (CCTV) surveillance rooms to monitor the crowd areas and to anticipate probable crowd movement for further information to the staff deputed at station premises.
- Additional manpower of security personnel is provided from Railway Protection Special Force (RPSF) Battalions.
- Monitoring and vigil on criminal activities is ensured by deploying staff in plain clothes.

As on 31st March, 2023, 65,301 passenger coaches are available for operation.

With a view to contain the spread of Covid-19 pandemic, Indian Railways had discontinued the operation of all regular passenger carrying trains with effect from 23rd March, 2020 and only special train services were being operated. Meanwhile, Indian Railways has undertaken rationalization of the time table in a scientific manner with the assistance of IIT-Bombay. The exercise has been undertaken, inter-alia, to provide for better passenger safety by creating maintenance corridor blocks, minimizing conflicts in existing time table, which, inter-alia involved conversion of passenger services into Mail/Express services. Since November, 2021, Mail/Express train services are being operated as per rationalized time-table and regular numbers.

Dedicated Freight Corridor Projects



Ministry of Railways has taken up construction of two Dedicated Freight Corridors (DFCs) i.e. Eastern Dedicated Freight Corridor (EDFC) from Ludhiana to Sonnagar (1,337 km) and Western Dedicated Freight Corridor (WDFC) from Jawaharlal Nehru Port Terminal (JNPT) to Dadri (1,506 km). Construction of EDFC has been fully completed and 1,220 km out of 1,506 km of WDFC has been completed and train operations are going on in the completed sections.

The construction of Dedicated Freight Corridors will reduce the logistic cost with higher axle load trains, Double Stack Container trains (DSC) and faster access to Northern hinterland by Western Ports and will also lead to development of new industrial hubs and Gati Shakti Cargo Terminals.

To ensure timely completion of Dedicated Freight Corridors, the Government has made timely provision of funds and monitored the project land acquisition activities by close coordination with State Governments directly and also in different forums i.e. Project Monitoring Group (PMG) etc.■

Status of Mumbai-Ahmedabad Bullet Train



The sanctioned cost of the Mumbai-Ahmedabad High Speed Rail (MAHSR) project is ₹1,08,000 cr. Till now, 290.64 km of pier foundation, 267.48 km of pier construction, 150.97 km of girder casting and 119 km of girder launching have been completed. The anticipated timeline and final cost can only be ascertained after award of all contract packages.

MAHSR project passes through high growth rate states of Gujarat and Maharashtra connecting business centres of Mumbai, Surat, Vadodara and Ahmedabad. The project Economic Internal Rate of Return (EIRR) as per feasibility study conducted by Japanese International Cooperation Agency (JICA) was estimated to be 11.8%.■

1318 Number of Stations have been Identified for Development/Redevelopment under Amrit Bharat Station Scheme

Ministry of Railways has launched 'Amrit Bharat Station scheme' for development of Stations on Indian Railways. This scheme envisages development of stations on a continuous basis with a long term approach. It involves preparation of Master Plans and their implementation in phases to improve the amenities at the stations like improvement of station access, circulating areas, waiting halls, toilets, lift/escalators as necessary, cleanliness, free Wi-Fi, kiosks for local products through schemes like 'One Station One Product', better passenger information systems, executive lounges, nominated spaces for business meetings, landscaping etc. keeping in view the necessity at each such station.



The scheme also envisages improvement of buildings, integrating the station with both sides of the city, multi-modal integration, amenities for 'Divyangjans', sustainable and environment-friendly solutions, provision of ballast less tracks, 'Roof Plazas' as per necessity, phasing and feasibility and creation of city centres at the station in the long term.

So far, 1318 number of stations have been identified for development/ redevelopment under this scheme. 1251 number of stations have been developed under 'Adarsh Stations Scheme' on Indian Railways.

The details of allocation and expenditure for development and maintenance of stations are maintained zonal Railway-wise and not state-wise or station-wise or scheme-wise. Development of stations and provision of passenger amenities are generally funded under Plan Head – 53 'Customer Amenities'. There are 2 Zonal Railways, i.e. Northern Railway (NR) and North Western Railway (NWR) which cater to the State of Punjab. During the years 2021-22, 2022-23 and 2023-24 total ₹1148.74 cr. expenditure has been incurred under Plan Head-53 and the total allocation of the current year is ₹2613.36 cr.

The status of implementation of the recommendations contained in the 6th report of the Standing Committee on Railways (17th Lok Sabha) on 'Passenger Amenities including Modernization of Railway Stations' has been placed on the Table of both Houses of Parliament on 8th March, 2021.■



Steps Taken by Government to Enhance the Level of Passenger Safety in Railways



To enhance the level of passenger safety in Railways, the Government has taken the following steps:

- Rashtriya Rail Sanraksha Kosh (RRSK) has been introduced in 2017-18 for replacement/ renewal/up-gradation of critical safety assets, with a corpus of ₹1 lakh cr. for five years. From 2017-18 till 2021-22, Gross expenditure of ₹1.08 lakh cr. was incurred on RRSK works. In 2022-23, the Govt. extended the currency of RRSK for another period of five years with Gross Budgetary Support (GBS) of ₹45,000 cr.
- Electrical/Electronic Interlocking Systems with centralized operation of points and signals have been provided at 6521 stations up to 31st December, 2023 to eliminate accidents due to human failure.
- Interlocking of Level Crossing (LC) Gates has been provided at 11143 level Crossing Gates up to 31st December, 2023 for enhancing safety at LC gates.
- Complete Track Circuiting of stations to enhance safety for verification of track occupancy by electrical means has been provided at 6,558 stations up to 31st December, 2023.
- Detailed instructions on issues related with safety of Signalling e.g. mandatory correspondence check, alteration work protocol, preparation of completion drawing, etc. have been issued.
- System of disconnection and reconnection for S&T equipment as per protocol has been re-emphasized.
- All locomotives are equipped with Vigilance Control Devices (VCD) to ensure alertness of Loco Pilots.
- Retro-reflective sigma boards are provided on the mast which is located two OHE masts prior to the signals in electrified territories to warn the crew about the signal ahead when visibility is low due to foggy weather.
- A GPS based Fog Safety Device (FSD) is provided to loco pilots in fog affected areas which enables loco pilots to know the distance of the approaching landmarks like signals, level crossing gates etc.
- Modern track structure consisting of 60 kg, 90 Ultimate Tensile Strength (UTS) rails, Pre-stressed Concrete Sleepers (PSC) Normal/Wide base sleepers with elastic fastening, fan-shaped layout turnout on PSC sleepers, Steel Channel/ H-beam Sleepers on girder bridges is used while carrying out primary track renewals.

- Mechanisation of track laying activity through use of track machines like PQRS, TRT, T-28 etc to reduce human errors.
- Maximizing supply of 130 m/260 m long rail panels for increasing progress of rail renewal and avoiding welding of joints, thereby ensuring safety.
- Laying of longer rails, minimizing the use of Alumino Thermic Welding and adoption of better welding technology for rails i.e. Flash Butt Welding.
- Monitoring of track geometry by OMS (Oscillation Monitoring System) and TRC (Track Recording Cars).
- Patrolling of railway tracks to look out for weld/ rail fractures.
- The use of Thick Web Switches and Weld-able CMS Crossing in turnout renewal works.
- Inspections at regular intervals are carried out to monitor and educate staff for observance of safe practices.
- Web based online monitoring system of track assets i.e. Track database and decision support system has been adopted to decide rationalized maintenance requirement and optimize inputs.
- Detailed instructions on issues related with safety of Track e.g. integrated block, corridor block, worksite safety; monsoon precautions etc. have been issued.
- Preventive maintenance of railway assets (Coaches and Wagons) is undertaken to ensure safe train operations and to keep a check on rail accidents across the country.
- Replacement of conventional ICF design coaches with LHB design coaches is being done.
- All unmanned level crossings (UMLCs) on Broad Gauge (BG) route have been eliminated by January 2019.
- Safety of Railway bridges is ensured through regular inspection of bridges. The requirement of repair/rehabilitation of bridges is taken up based upon the conditions assessed during these inspections.
- Indian Railways has displayed statutory 'Fire Notices' for widespread passenger information in all coaches. Fire posters are provided in every coach so as to inform and alert passengers regarding various do's and don'ts to prevent fire. These include messages regarding not carrying any inflammable material, explosives, prohibition of smoking inside the coaches, penalties etc.
- Production Units are providing Fire detection and suppression system in newly manufactured Power Cars and Pantry Cars, Fire and Smoke detection system in newly manufactured coaches. Progressive fitment of the same in existing coaches is also underway by Zonal Railways in a phased manner.
- Regular counselling and training of staff is undertaken.
- Concept of Rolling Block has been introduced in Indian Railway (Open Lines) General Rules vide Gazette notification dt. 30th November, 2023, wherein work of maintenance /repair / replacement is planned up to 52 weeks in advance on rolling basis and executed as per plan.

1. Kavach is indigenously developed Automatic Train Protection (ATP) system. Kavach is a highly technology intensive system, which requires safety certification of highest order.
2. Kavach aids the loco pilot in train running within specified speed limits by automatic application of brakes in case loco pilot fails to do so and also help the train safely run during inclement weather.
3. The first field trials on the passenger trains were started in February 2016. Based on the experience so gained and Independent Safety Assessment of the system by a 3rd party (Independent Safety Assessor: ISA) three firms were approved in 2018-19, for supply of Kavach.
4. Subsequently Kavach was adopted as a National ATP system in July 2020.
5. Kavach has so far been deployed on 1465 rkm and 139 locomotives (including Electric Multiple Unit rakes) on South Central Railway.
6. Presently Kavach tenders have been awarded for Delhi – Mumbai (including Ahmedabad-Vadodra Section) and Delhi – Howrah (including Lucknow-Kanpur Section) corridors (approximately 3000 rkm). A part of these sectors (around 534 rkm) passes through state of Gujarat and (around 943 rkm) of Uttar

Pradesh. The progress of main items related to Kavach is as under:

- Laying of Optical Fibre Cables : 3040 km.
- Installation of Telecom Towers : 269 nos.
- Provision of equipment at Stations : 186 nos.
- Provision of equipment in loco : 170 locos.
- Installation of Track side equipments : 827 rkm.

7. Indian Railways has also taken up preparatory works including survey, Detailed Project Report (DPR) and preparation of detailed estimate on another 6000 rkm, Kavach is being provided on Indian Railway progressively.

8. Implementation of Kavach involves installation of Station Kavach at each and every station, installation of RFID tags throughout the track length and provision of Loco Kavach on each and every locomotive running on Indian Railways, a communication backbone, requiring installation of towers throughout the section, laying of optical fiber throughout the section. Presently there are three Indian OEMs who are approved for Kavach. Efforts are being made to develop more OEMs to enhance the capacity and scale up the implementation of Kavach.

9. The cost for provision of track side including station equipment of Kavach is approximately ₹50 lakhs/km and cost for provision of Kavach equipment on loco is approximately ₹70 lakh/loco.■

82 Vande Bharat Train Services Operational Across Indian Railways



As on 31st January, 2024, 82 Vande Bharat train services are operating across the Indian Railways, connecting states having Broad Gauge (B.G.) electrified network. Besides, provision of stoppage of train services and introduction of new train services, including Vande Bharat, are ongoing processes on Indian Railways subject to traffic justification, operational feasibility, resource availability, etc. Train-wise and state-wise revenue generated is not maintained.

Sectional speed over 10,981 rkm covering Golden Quadrilateral (GQ) and Diagonal routes and other 'B' routes has been raised to 130 kmph. Further, works for raising of sectional speed to 160 kmph on existing New Delhi-Mumbai (including Vadodara-Ahmedabad) and New Delhi-Howrah (including Kanpur-Lucknow) routes have been taken up. During the financial year 2022-23, overall occupancy of Vande Bharat trains is 96.62%.

The improved version of Vande Bharat trains presently running over the Indian Railways network with enhanced safety features, faster acceleration, better ride index and passenger amenities, such as Automatic Plug Doors, Reclining Ergonomic Seats, Comfortable Seating with revolving seats in executive class, Mobile charging sockets for every seat, etc. and is fitted with KAVACH system.■

During the reriod 2014-23, 10,867 Nos.
Road Over Bridges/Road Under Bridges Completed



Model Station Scheme was in vogue between June, 1999 and November, 2008. Ministry of Railways has launched 'Amrit Bharat Station Scheme' for development of Railway stations on Indian Railways. This scheme envisages development of stations on a continuous basis with a long-term approach.

It involves preparation of Master Plans and their implementation in phases to improve the amenities at the stations like improvement of station access, circulating areas, waiting halls, toilets, lift/escalators as necessary, cleanliness, free Wi-Fi, kiosks for local products through schemes like 'One Station One Product', better passenger information systems, executive lounges, nominated spaces for business meetings, landscaping etc. keeping in view the necessity at each station.

The scheme also envisages improvement of building, integrating the station with both sides of the city, multi-modal integration, amenities for Divyangjans, sustainable and environment friendly solutions, provision of ballastless tracks, 'Roof Plazas' as per necessity, phasing and feasibility and creation of city centres at the station in the long term. Under the Scheme, 1,318 stations, including 23 stations in Bikaner division and 18 stations in Jodhpur division, have been identified for upgradation/ modernisation over Indian Railways.

During the period 2014-23, total 10,867 nos. Road Over Bridges (ROBs)/Road Under Bridges (RUBs) were completed, whereas, during the period 2004-14, only 4,148 nos. ROBs/RUBs were completed. During the year 2023-24, 612 nos. ROBs/RUBs have been completed up to December, 2023. During the year 2023-24, ₹3970 cr. have been spent up to December, 2023 for the construction of ROBs and RUBs.

Construction of Road Over Bridges (ROBs)/Road Under Bridges (RUBs) is taken up to eliminate manned level crossing gates. Sanctioning of works of Road over Bridge (ROB)/Road under Bridge (RUB) in lieu of level crossings (LCs) is a continuous and dynamic process of Indian Railway. Such works are taken up on the basis of its impact on safety in train operations, mobility of trains and impact for road users and feasibility etc. As on 31st January, 2024, total 1,948 ROBs and 2,325 RUBs have been sanctioned over Indian Railways, which are at different stages of planning, estimation and execution etc.

In order to improve safety in train operation, to increase mobility and to accelerate road crossing works, Railways has issued new policy on 2nd March, 2023. The main features of the policy are as under:

- Priority of LC elimination is based on its impact on safety in train operations, mobility of trains and impact for road users, feasibility of execution and cost considerations.
- Execution of work on single entity basis by Railways wherever possible. In case any Road Owning authority/State Government wants then Railways may permit them to execute the work on single entity basis.

Indian Railways Achieved 1297.38 MT Freight Loading till January 2024



Indian Railways is scaling new heights in its freight business as seen from the stellar performance of January 2024.

For the month January, highest ever loading of 142.7 MT has been recorded with a growth of 6.5% on year-on-year basis. Indian Railways is continuing to act as the backbone for transportation fuelling the core economic activities.

This record loading has been achieved along with higher number of capacity augmentation works facilitated in tandem. A total of 476 km length of track was commissioned across 25 sections vis-à-vis 308 km across 20 sections last year.

The performance has been accomplished despite challenging adverse weather conditions, including an extensive period and geographical spread of fog.

This has been possible with the larger vision of the Government to give massive push in capacity augmentation, induction of new rolling stock, focus on improving operational efficiencies and business development activities to tap new traffic streams.

On cumulative basis from April, 2023 to January, 2024, freight loading of 1297.38 MT was achieved against last year's loading of 1243.46 MT, an improvement of approximate 53.92 MT over last year's loading for the same period. Railways has earned ₹1,40,623.4 cr. against ₹1,35,388.1 cr. over the last year which is an improvement of approx ₹5,235.30 cr., as compared to the same period of the last year.

During the month of January 2024, originating freight loading of 142.70 MT has been achieved against loading of 134.07 MT in January 2023, which is an improvement of approx 6.43% over the last year. Freight revenue of ₹15,514.82 cr. has been achieved in January 2024 against ₹14,908.82 cr. freight earnings in January 2023, thereby showing an improvement of about 4.06 % over the last year.

IR achieved loading of 71.45 MT in coal, 17.01 MT in iron ore, 6.07 MT in pig iron and finished steel, 7.89 MT in cement (excl. clinker), 5.52 MT in clinker, 4.53 MT in foodgrains, 5.27 MT in fertilizers, 4.31 MT in mineral oil, 6.98 MT in containers and 10.20 MT in balance other goods during January, 2024.



Following the Mantra, 'Hungry For Cargo', IR has made sustained efforts to improve the ease of doing business as well as improve the service delivery at competitive prices. The customer centric approach and work of Business Development Units backed up by agile policy making helped Railways towards this significant achievement.■

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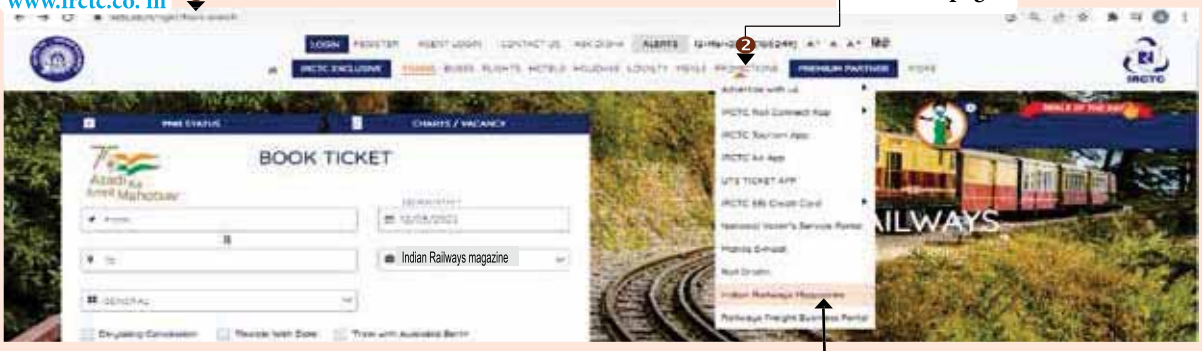
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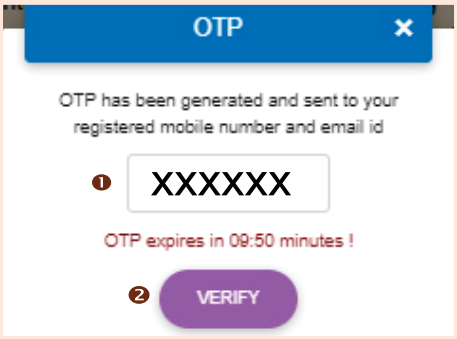


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Opening Ceremony of Month Long Event Organized by RPF in National Police Memorial



National Police Memorial (NPM), Delhi is nation's endeavour to honour the Police personnel of all CPOs/CAPFs/State Police who sacrificed their lives in line of duty for National Security. The memorial stands tall as an ode to our Policemen, who fight terrorism, militancy and crime at the border and in the hinterland while maintaining law and order, protecting national assets, combating disasters and other emergencies.

The NPM conducts a solemn ceremony every weekend to express gratitude and pay respect to the police martyrs and honour members of their family. The responsibility of conducting this event for one month is entrusted to one Central Police Force on rotation. The event will be organized by Railway Protection Force in the month of February 2024.

The RPF, an armed force of the Union under the Ministry of Railways, has taken on missions to save lives, assist those in need and combat human trafficking and drug smuggling. During 2023, the force has saved 3,719 lives, rescued 11,794 children and 3,492 adults in distress, rescued 1,048 victims from the clutches of human traffickers with arrest of 257 human traffickers and arrested 922 drug traffickers. The force works with an objective of 'Sewa Hi Sankalp'.

The force has transitioned from being solely responsible for the security of railway property to becoming dedicated protectors of railway passengers. In acknowledgment of the RPF's unwavering dedication, RPF personnel have been honoured with 3 President's Police Medals for Gallantry, 19 Police Medals for Gallantry, 94 President's Medals for Distinguished Service, and 942 Medals for Meritorious Service.

As a fitting onset of the month long event, the Railway Protection Force (RPF), conducted the opening ceremony featuring various activities such as laying of wreath on the Police Memorial, Band Display and Retreat on 3rd February, 2024, at the National Police Memorial in New Delhi. Sh. Sanjay Kumar Mishra, IG-cum-PCSC/RPF South Eastern Railway was the chief guest of the solemn function.

Martyrs serve as symbols of exceptional courage and heroism in the face of challenging circumstances. The RPF has a rich legacy of martyrdom, with its staff and officers sacrificing their lives in the line of duty while battling insurgents, anti-national elements, and criminals to protect Indian Railways and its commuters. Over 1,000 RPF/RPSF personnel have made the supreme sacrifice in the line of duty.

In recognition of the sacrifices made, the families of the martyrs were invited to the National Police Memorial from various parts of the nation. Alongside the families of the Force personnel, they paid homage to the martyrs by offering floral tributes at the National Police Memorial and visited the museum on the premises. The Chief Guest honoured and felicitated the families of the martyrs during the function, which was followed by a captivating band display.

The ceremony will continue to be conducted by RPF in NPM on every Saturday and Sunday of February 2024.■

During January 2024, RPF reunited over 549 children under Operation 'Nanhe Faristey'



The Railway Protection Force (RPF) is unwavering in its commitment to safeguarding railway property, passenger areas, and the well-being of travellers. In the month of January 2024, RPF continued to ensure the safety, security and comfort of passengers, while also assisting Indian Railways in delivering reliable freight transport services to its customers.

RPF, during the month of January 2024, made certain commendable achievements under several operations run by it:

Operation 'Nanhe Faristey' - Rescuing Lost Children: Under the mission 'Nanhe Faristey,' RPF played a pivotal role in reuniting more than 549 children in need of care and protection with their families. These children were separated from their families for various reasons, and RPF worked tirelessly to ensure their safe return to home.

Operation 'Jeevan Raksha' - Saving Lives: The RPF's vigilant and swift action saved the lives of 233 passengers who had accidentally fallen while de-boarding or boarding moving trains, narrowly avoiding being caught under the wheels, at platforms and railway tracks in the month of January 2024, under Operation 'Jeevan Raksha.'

Empowering Women Passengers - 'Meri Saheli' Initiative: RPF takes the security of women passengers seriously and launched the 'Meri Saheli' initiative. During the month of January 2024, 229 'Meri Saheli' teams attended 13,615 trains and provided security assurance to 4.1 lakhs lady passengers. RPF also took legal action against 7402 persons who were found travelling in coaches reserved for the women passengers.

Cracking Down on Touts - (Operation 'Uplabdh'): In the fight against touts, RPF arrested 379 individuals in the month of January 2024 and took legal action against them as per the law. Additionally, they seized future reserved railway tickets, valued at ₹44.46 lakhs.

Operation 'NARCOS' - Combating Drug Crimes: In a commendable effort, RPF arrested 76 individuals and seized narcotics, valued at ₹4.13 cr. during the month of January 2024. These criminals were handed over to empower Government agencies for further legal action.

Swift Response to Passengers' Concerns: RPF promptly addressed security-related passenger complaints through Rail Madad Portal and the Helpline (No. 139 integrated with Emergency Response Support System No. 112). Over 19,738 complaints were received in the month of January 2024, with RPF taking necessary actions to resolve them.

Operation 'Yatri Suraksha' - Protecting Passengers: RPF supplements the efforts of police in preventing and detecting crimes against railway passengers. In January 2024, RPF arrested 225 criminals involved

in offenses against passengers, delivering them to the concerned GRP/Police for taking onward legal action.

Ensuring Safety through 'Operation Sanraksha': In a resolute effort to maintain passenger safety and protect railway services, RPF arrested 53 individuals involved in the perilous act of stone pelting on running trains in January 2024.

Assisting Those in Need - (Operation Seva): With a humanitarian approach, RPF provided assistance to 227 elderly, sick or injured passengers during their rail travels in the month of January 2024.

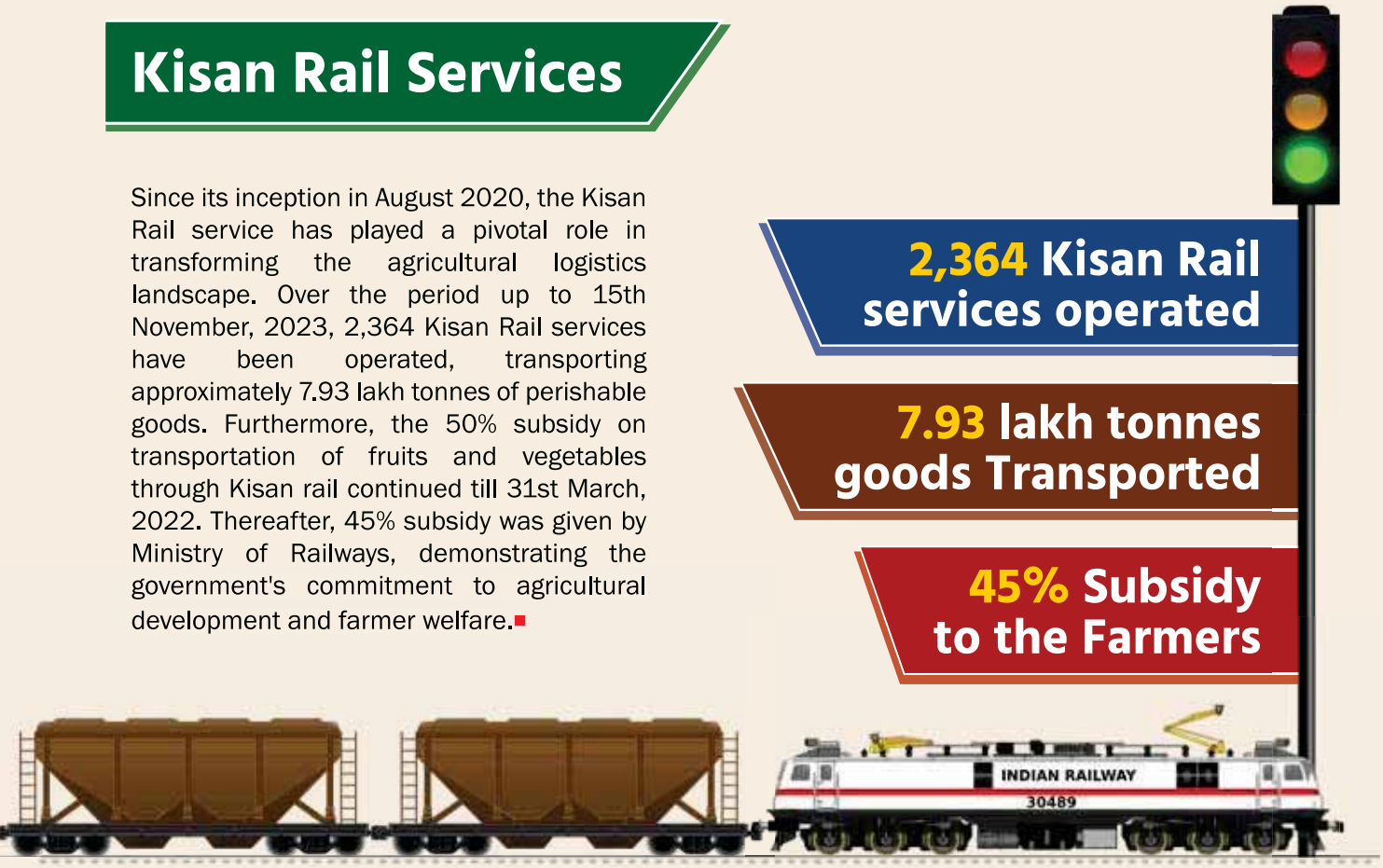
Curbing Illegal Goods Transport - (Operation Satark) : Under 'Operation Satark,' in the month of January 2024, the Railway Protection Force (RPF) seized illegal tobacco products and illegal liquor worth ₹30.15 lakhs, apprehending 86 individuals. These individuals were subsequently handed over to the relevant Government Law Enforcement Agencies. Additionally, unaccounted cash amounting to ₹1.53 cr., gold worth ₹37.18 lakhs, and silver worth ₹11.67 lakhs were also recovered during the operation.■

The Railway Protection Force, with its dedicated personnel and its mission to ensure a safe and comfortable travel experience for all passengers, remains at the forefront of railway security, upholding the values of integrity, compassion, and responsibility.



Kisan Rail Services

Since its inception in August 2020, the Kisan Rail service has played a pivotal role in transforming the agricultural logistics landscape. Over the period up to 15th November, 2023, 2,364 Kisan Rail services have been operated, transporting approximately 7.93 lakh tonnes of perishable goods. Furthermore, the 50% subsidy on transportation of fruits and vegetables through Kisan rail continued till 31st March, 2022. Thereafter, 45% subsidy was given by Ministry of Railways, demonstrating the government's commitment to agricultural development and farmer welfare.■



NHSRCL Signs Contract Agreement for Design and Construction of Thane Rolling Stock Depot in Maharashtra for Bullet Train Project



National High Speed Rail Corporation Limited has signed a contract agreement with M/s Dineshchandra DMRC JV for design and construction of Thane Rolling Stock Depot in the state of Maharashtra. The agreement was signed in the presence of Shri Vivek Kumar Gupta, MD/ NHSRCL, Directors, senior officers of NHSRCL, representative from JICC (Japan Information & Culture Center), MLIT Japan (Ministry of Land, Infrastructure, Transport and Tourism), JICA (Japan International Cooperation Agency), Embassy of Japan in India and DRA-DMRC JV.

The scope of work includes Civil Works, Inspection Sheds, Maintenance Depot and Installation, Testing and Commissioning of Maintenance facilities. The Thane depot will spread over in an area of about 55 hectares and will have facilities for the upkeep and light maintenance of the trainsets. Initially 4 inspection lines and 10 stabling lines will be constructed, which will increase to 8 and 31, respectively in future.

About 200 numbers of 40 types of depot machineries, including bogie exchange machine, underfloor wheel re-profiling machine, testers and data readers, ultrasonic flaw detectors, trainset washing plant, etc., that will be used for the maintenance of the high speed train sets as per Shinkansen standard at the depot are being procured from Japan. The Mumbai – Ahmedabad High Speed Corridor (Bullet Train Project) will be serviced by three Rolling Stock depots located at Sabarmati and Surat in Gujarat and Thane in Maharashtra. The depots are being designed, based on the experience of Shinkansen depots in Japan.■

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News of Zonal Railways and Production Units

Vishisht Rail Seva Puraskar 68th Railway Week Awards Ceremony



Vishisht Rail Seva Puraskar 68th Railway Week Awards Ceremony was held on 12th February, 2024. General Manager, Shri Sanjeev Kishore felicitated and distributed Efficiency shields to the Divisions that demonstrated exceptional performance in the previous financial year, as well as awards to officers and staff for their outstanding contributions.■

68th Distinguished Railway Service Award Ceremony held in West Central Railway

In West Central Railway, on 29th January, 2024, under the Railway Week Celebration 2023, the 68th Vishisht Rail Seva Puraskar Ceremony was celebrated at the Utsav Community Hall at Madan Mahal. General Manager Smt. Shobhana Bandopadhyaya honoured 9 officers and 53 employees working in all three divisions, Workshops and Headquarters with the Vishisht Rail Seva Puraskar and 22 railway employees with the Rail Seva Puraskar. Apart from this, a total of 25 departmental efficiency shields including Over All Efficiency Shield were also presented.■



BLW set a Record by Producing 55 Electric Railway Locomotives in the Month of January



Banaras Locomotive Works set a new record by producing the highest ever monthly electric loco production in January, 2024. In just 26 working days the employees of BLW produced 55 electric locos i.e. more than 2 Locomotives per day. With this, BLW has not only created history in monthly electric loco production but has also set another record by producing the maximum number of locomotives during the financial year 2023-24. During the financial year 2023-24, history has been created by making 379 Locomotives till the month of January itself, which includes 375 electric Locomotives and 4 diesel Locomotives.

General Manager, Shri Basudev Panda reached BLW Workshop and congratulated Team BLW for this historic record.■

Two Diesel Loco Sheds of SCR adjudged as best among Indian Railways

The two Loco sheds of South Central Railway have attained National Level recognition by securing 1st and 2nd places for their best performance in terms of homing electric Locos and for having least failures in the year. The details of the Loco sheds which have been adjudged as best across Indian Railways are :

- Kazipet Diesel Loco Shed stands in the 1st position in terms of homing electric Locos.
- Gooty Diesel Loco Shed stands in the 2nd position in terms of homing electric Locos.



Indian Railways is moving ahead with electrification of its entire rail network and has completed nearly 95%, the balance portion being completed within short span of time. In South Central Railway, 94% of its network has already been electrified and works in the balance portion are in fast pace. At present, 373 electric locomotives are being maintained at five Diesel Loco Sheds of SCR. Kazipet Diesel Loco Shed is homing 113 WAG-7 electric Locos while Gooty Diesel Loco shed is homing 90 WAG-9 electric Locos. The maintenance of electric Locos in these Diesel Loco sheds has gained national recognition for best practices and have been chosen for awarding cash prizes.



Shri Arun Kumar Jain, General Manager, SCR congratulated Kazipet and Gooty Diesel Loco Sheds officers and staff for this special recognition.■

Chief Commissioner of Railway Safety Inspected Different Lines of Metro Railway

Shri Janak Kumar Garg, Chief Commissioner of Railway Safety inspected newly built Majerhat Metro station and undertook a trolley inspection from Majerhat to Taratala station to explore the possibility of commissioning Majerhat station of Purple Line and starting train operations on this stretch of Purple Line on 4th February, 2024.



He inspected Howrah Maidan to Esplanade stretch of East-West Metro under the river Hooghly on 5th and 6th February, 2024 by undertaking a trolley inspection. Shri Janak Kumar Garg also inspected Electronic Interlocking (EI) signalling system on both tracks in between Kavi Subhash to Hemanta Mukhopadhyay stretch of Orange Line by undertaking a train journey on 7th February, 2024.■

SER, Kolkata team won 44th All India Railway Hockey Women's Championship

South Eastern Railway emerged victorious in the final of the 44th All India Railway Women Hockey Championship played at Synthetic Turf Hockey Stadium in Rail Coach Factory, Kapurthala. The SER team won the title by defeating Northern Railway New Delhi by 4-1.



Earlier in the match for third and fourth positions, Central Railway defeated Western Railway Mumbai 2-1.■

Latest WAG-9 HC Twin Locomotive



CLW has produced WAG-9 HC twin locomotive. This innovation is suitable for heavy haulage.

This twin locomotive has many salient features such as:

- Permanently connected two WAG-9 locomotives with 12,000 HP rating and suitable for heavy hauling
- COCO bogie used for twin loco giving better tractive effort.
- RTIS (Real Time Train Information System) is implemented for remotely watching loco running at control rooms
- Both inner cabs are modified as flat cabs.
- Vestibule is used for moving from one cab of one locomotive to another cab of second locomotive.
- Toilet is installed in lead cabs, for the use of loco pilots. The loco pilots can't use it when the locomotive is in the moving condition.
- Twin loco can be detached from each other and can be moved from both flat ends also, if required.
- At a standstill condition, the locomotive has a feature to switch over to energy saving mode, so that to ensure low power consumption.

It is hoped that, the production of WAG-9 HC twin locomotive will help IR for better operation of loaded trains (5500 MT) on gradient and level sections both.

The 500th and 501st locomotive, WAG-9 HC TWIN (No.38378 and 38379) was flagged off by senior most supervisors and staff of different shops and departments in the presence of Shri Hitendra Malhotra, General Manager from the CLW workshop premises.

CLW Turned out 487 Electric Locomotives in the FY 2023-24

Chittaranjan Locomotive Works achieved best ever electric locomotive production so far in the financial year, 2023-24 and turned out 487 electric locomotives which is the highest ever production in a financial year and all time highest loco production figure till date in a financial year. The last best ever loco production figure was 486 electric locomotives achieved during the financial year, 2021-22. Shri Hitendra Malhotra, GM congratulated the entire team of CLW and appreciated their commitment towards the progress of production.



Celebrations of the Completion of 125 years of WR HQ Building



Marking the historic occasion of the completion of 125 years of Western Railway's Headquarters Building at Churchgate, Mumbai, WR had planned a month-long celebration in January 2024. The month-long gala included various events such as light and sound show, exhibition, heritage walks, release of coffee table book, special radio campaign, etc. To culminate this grand celebration, a mega musical show 'Ateet Ke Jharokhe Se' was organized on Sunday, 28th January, 2024. The mega dance and drama performance was a remarkable ode to the rich history of Western Railway, formerly known as the Bombay, Baroda & Central India (BB&CI) Railway and its historically magnificent headquarters in present-day Mumbai.

550 people were involved in bringing the show to life. The epic stage performances were carried out by 250 artists including the artists from the cultural teams of Western & Central Railways and their family members. The show was choreographed by renowned choreographer Shri Shiamak Davar and his team. The colossal set for this glorious event was made in-house by the staff of Carriage Repair Workshop, Lower Parel, Mumbai. The show started with a welcome speech by Shri Shalabh Goel, Sr. Deputy General Manager of Western Railway, who was the driving force behind this month-long celebration. The show was attended by Shri Ashok Kumar Misra, General Manager of Western Railway, Smt. Kshama Misra, President of Western Railway Women Welfare Organisation (WRWWO), Principal Head of Departments, senior officers and retired senior railway officials. The mega show commenced with invoking blessings from Lord Ganesha with an enchanting performance. Through a dramatic presentation, the show portrayed the rich history of BB&CI Railway and how it came into being. It also included exclusive dance performances showcasing various dance forms of the country, while representing the history of the railway. Folk dance performances of Gujarat and Koli dance as well as various dance performances by railway staff were a great spectacle for all. Dancers from Shiamak Davar's team also participated in the show with their mesmerizing performances. The mega musical performances also encapsulated the spirit of 'Aamchi Mumbai' and the significance of the iconic building of Western Railway's Headquarters at Churchgate, Mumbai.■

Breakthrough in Tunnel No. 4 of Dimapur – Kohima

New BG Single Line Project Achieved



In another major step towards completion of Dimapur - Kohima new Broad Gauge Line connectivity project, N.F. Railway recently achieved a major milestone in the second phase of the project. Breakthrough of Tunnel no. 4 between Molvom - Pherima station that measures 1319 meters in length including 151 meters cut and cover got done on 24th January, 2024. This is the 2nd longest tunnel in phase-II of the project. This achievement is considered a major step ahead for connecting Kohima with rest of the nation through Indian Railways network.

The average rate of underground excavation is 41.25 meters per month. The underground excavation work is executed by using New Austrian Tunnelling Method (NATM). With the final breakthrough of tunnel, underground excavation of 1168 meters has been completed. Final lining of the tunnel is targeted for completion in May, 2024.

Indian Railways is significantly contributing towards transformation of the North-eastern states by executing several new railway line projects. Constructing new railway lines to connect all the state capitals of north-eastern region is going on under capital connectivity projects and constructing of a new broad gauge railway line from Dimapur to Kohima in Nagaland is one such project. The total length of project is 82.5 km (2.75 km in Assam and 79.75 km in Nagaland) having 08 new stations i.e. Dhansiri, Dhansiripar, Shokhuvi, Molvom, Pherima, Piphema, Menguzuma and Zubza. The project includes 24 major bridges, 156 minor bridges, 06 Road Over Bridges, 15 Road Under Bridges and 21 Tunnels of 31 km length. The total anticipated cost of the project is ₹6,663 cr.

KIND ATTENTION

AUTHORS/WRITERS contributing articles for the magazine are requested to restrict their articles to a reasonable size. Ideally an article should not exceed 1000 WORDS.

In view of the space constraints of the magazine, sometimes it becomes difficult to include longer articles. All are requested to appreciate our problem and co-operate.

DHR Registered Record Earnings
During the Current Financial Year



The UNESCO Heritage Darjeeling Himalayan Railway (DHR) of N. F. Railway has marked highest ever earnings and passenger footfalls in the history of DHR during this financial year till December, 2023. The DHR has recorded the highest ever revenue of nearly ₹17.3 cr. surpassing all the previous records. The increased earning was achieved because of introduction of more joyride services. Huge footfall during this peak season of tourist flow in the section and growth in the passenger traffic led rise in the earning.

The DHR also introduced special services like Steam Jungle Tea Safari, Red Panda, HimKanya etc. Charter Trains, Special Film Shooting Trains, Heritage Dining Car are also some attractive services being offered in the DHR. A new coach restaurant has been opened at Darjeeling and a heritage restaurant in Kurseong to attract more tourists in DHR.

Ghum winter festival was successfully organized from 25th November till 10th December, 2023. Local people and tourists from all corners attended the festival with great enthusiasm. Footfall of massive masses helped in promoting tourism and cultural heritage of the DHR section.

Several initiatives have also been taken for the promotion of DHR in the country and abroad. To boost the tourism, new coaches were introduced and new services were launched. Darjeeling station is being upgraded with new features like heritage type windows, Kanchenjunga view point etc.■

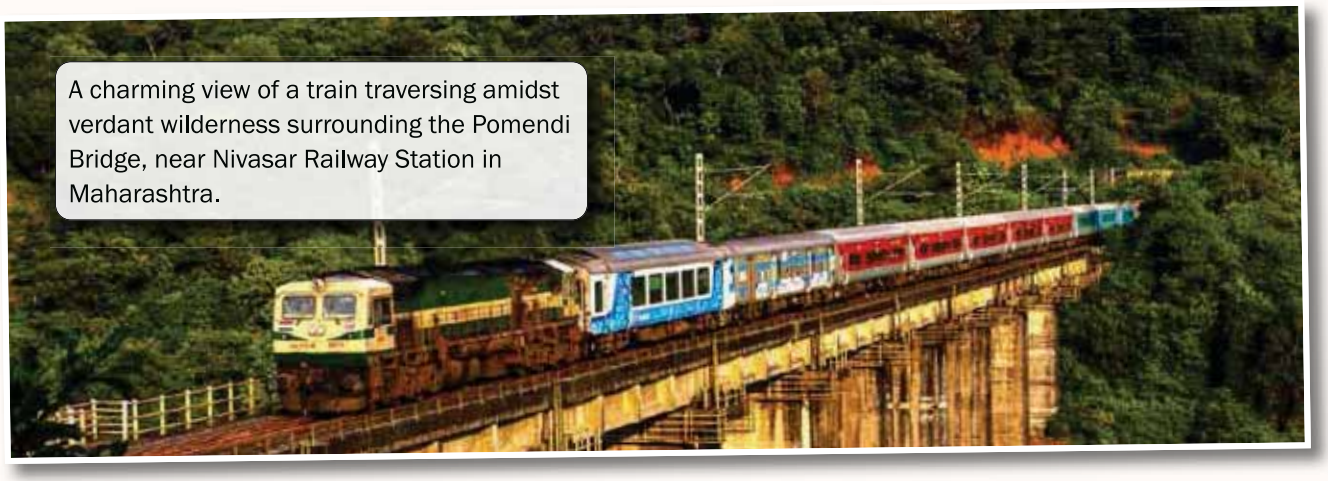
NFR Achieved Track Safety Targets Prior Time Frame

During the financial year 2023-24, N. F. Railway has achieved three milestone targets related to track safety which were desired by the Railway Board. Infact, the targets achieved were prior to even completion of the financial period.

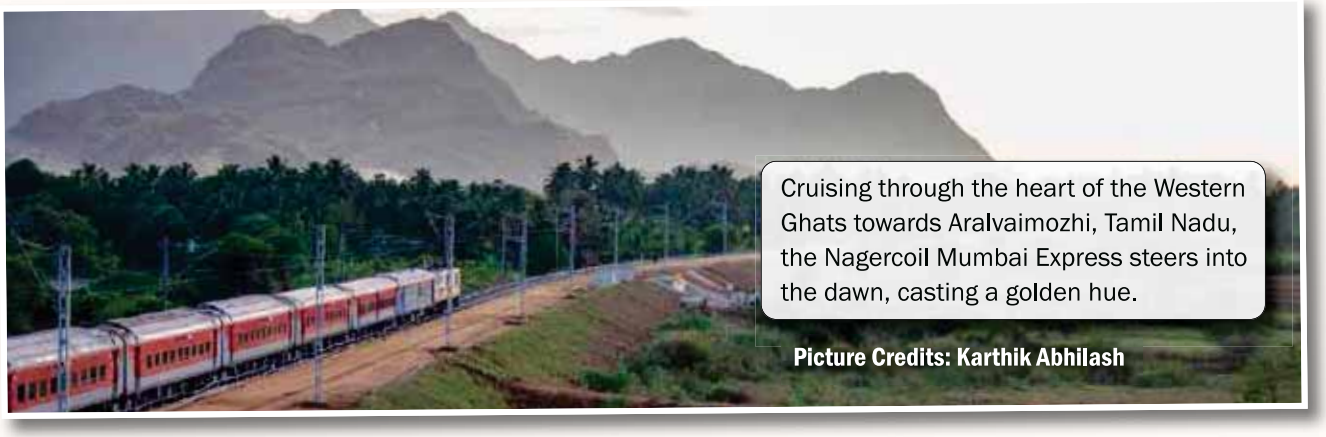
The milestones achieved by N. F. Railway are related to 218 tkm of complete track renewal followed by installation of 123 numbers of Thick Web Switches (TWS) against the desired target of 100 numbers during the current financial period. Also, N. F. Railway has completed the insertion of 6.09 lakh cubic metre ballast against the target of 5 lakh cubic metre during the current period.■



Photo Gallery

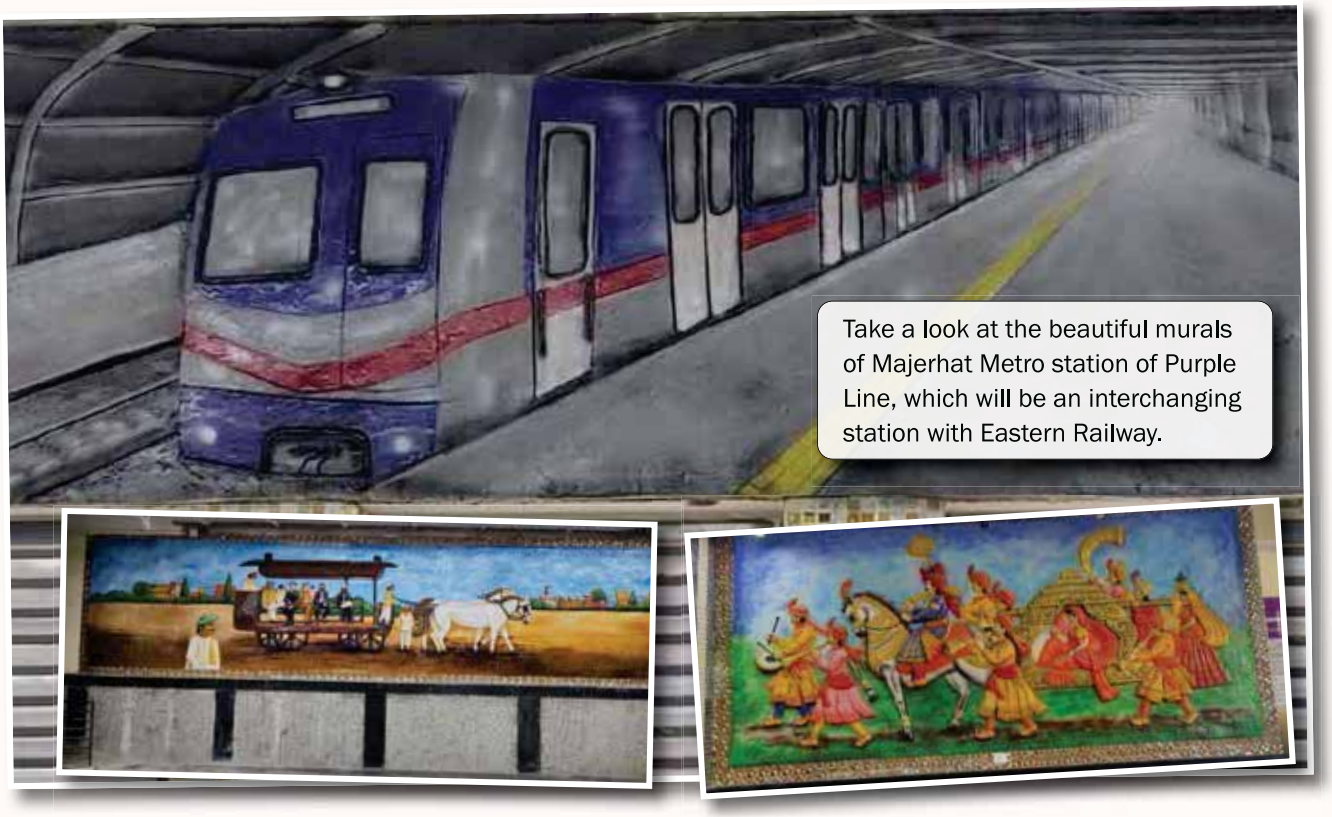


A charming view of a train traversing amidst verdant wilderness surrounding the Pomendi Bridge, near Nivasar Railway Station in Maharashtra.



Cruising through the heart of the Western Ghats towards Aralvaimozhi, Tamil Nadu, the Nagercoil Mumbai Express steers into the dawn, casting a golden hue.

Picture Credits: Karthik Abhilash



Take a look at the beautiful murals of Majerhat Metro station of Purple Line, which will be an interchanging station with Eastern Railway.

Progress Report

Rail section between Bilaspur and Jharsuguda is being done at a rapid pace



The construction of the fourth railway line on a 206 km long rail section between Bilaspur and Jharsuguda is being done at a rapid pace. With the construction of this rail line connecting Chhattisgarh and Odisha, the operational capacity of trains as well as the speed of trains will also increase.

17th February, 2024

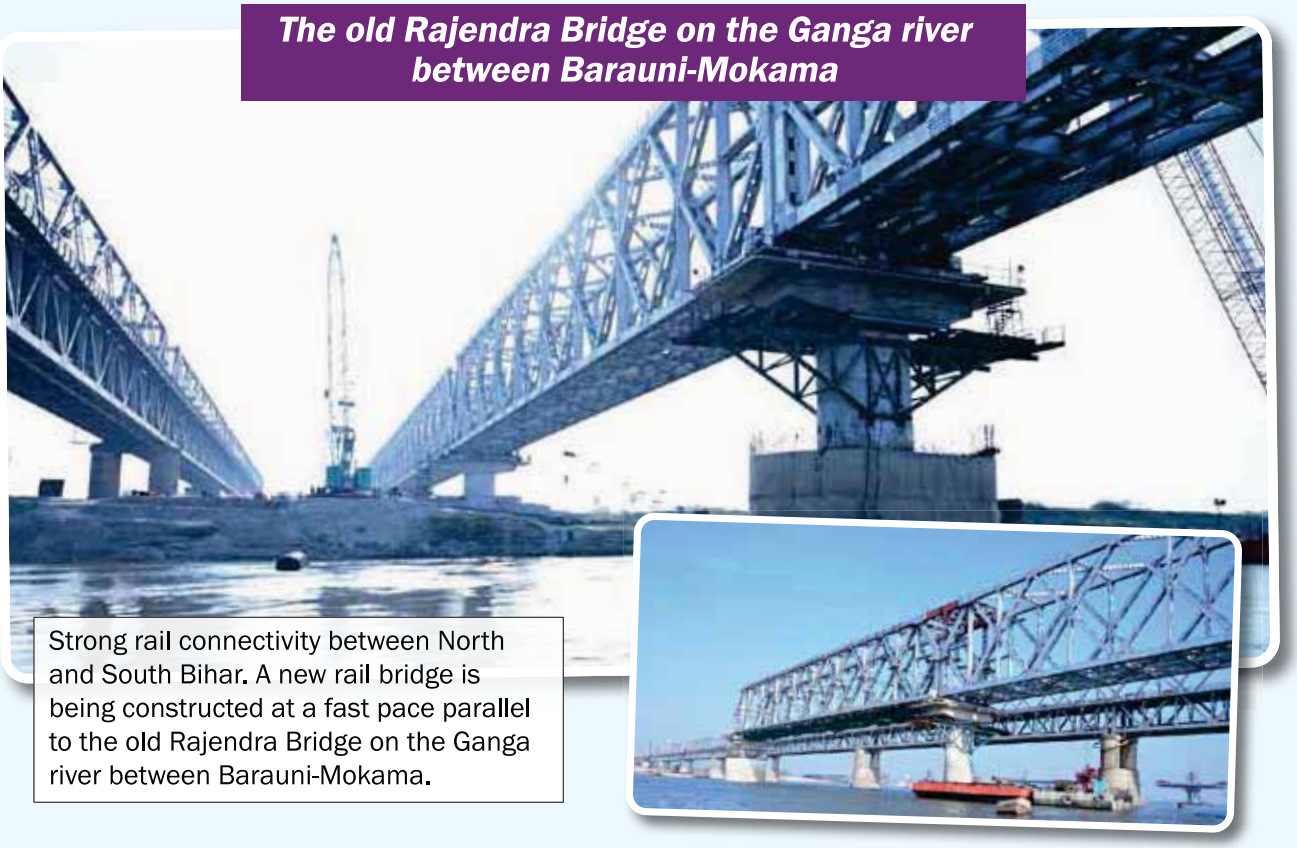
The Mumbai-Delhi route, elevating connectivity



Embracing progress and development, the new 2-lane ROB in place of LC-150 connects Gothangam to Sayan stations situated on the DFC along the Mumbai-Delhi route, elevating connectivity.

5th February, 2024

The old Rajendra Bridge on the Ganga river between Barauni-Mokama



Strong rail connectivity between North and South Bihar. A new rail bridge is being constructed at a fast pace parallel to the old Rajendra Bridge on the Ganga river between Barauni-Mokama.

14th February, 2024

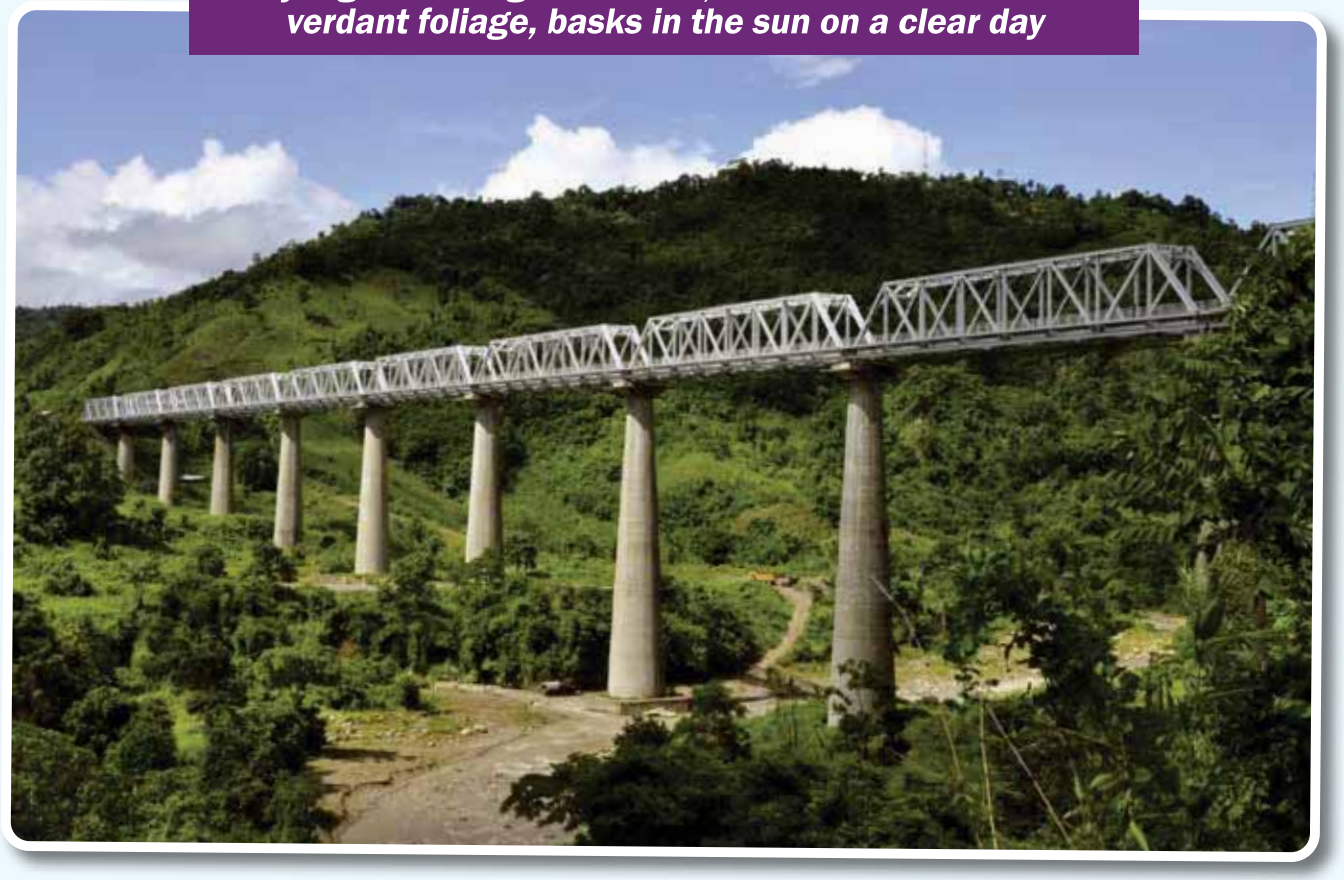
Aerial view of Satyajit Ray Metro station of Orange Line



Making headway towards Viksit Bharat! Advancing on the MAHSR Corridor, 40-metre-long girders are being meticulously assembled, anchoring the foundation of futuristic transportation.



Dayang Rail Bridge in Assam, nestled in foothills and verdant foliage, basks in the sun on a clear day



A major breakthrough achieved of 317 m long tunnel in Boudh, Odisha



Fast-Tracking Progress for Rail Infra in Odisha. A major breakthrough achieved of 317 m long tunnel in Boudh, Odisha, propelling the Khurda Road-Balangir BG New Rail Line Project.

14th February, 2024

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Rail Coach Restaurant at Andheri Railway Station





Reviving an old non-operational coach into a premium eatery, the first 'Rail Coach Restaurant' was commissioned at Andheri Railway Station in Mumbai, Maharashtra, serving appetising meals with a refined coach-like ambience.

Station Mahotsav marked the celebration of Guntakal Railway Station's 158 years



Station Mahotsav marked the celebration of Guntakal Railway Station's 158 years of exceptional service in Andhra Pradesh, with lively participation from Railway passengers and retired staff.

Effect of Correlated Colour Temperature on Passenger Comfort

Shri Pradip Singh
Director/Standard Electrical
RDSO

Shri Akash Shrivastava
SSE/Standard Electrical
RDSO

Shri Rohit Verma
JE/Standard Electrical
RDSO

Lighting plays a critical role in creating a comfortable and productive environment, and the use of LED lighting in public transportation has become increasingly popular. The Correlated Colour Temperature (CCT) of LED lights has a significant impact on the mood, perception and comfort of passengers, and choosing the right colour and illuminance level is important in providing a pleasant experience. This technical paper will discuss the effects of CCT on mood, perception and comfort of train passengers, its importance in selecting light's colour and illuminance level, and its implications for the transportation industry.

Introduction

Lighting is important for human activities. A good lighting environment provides us with an environment in which visual tasks can be performed efficiently and accurately without causing visual fatigue and discomfort. Since human inception on earth, it has relied on sunlight for timing its daily routine tasks and organising its day-to-day work according to light available to it. Various lighting conditions as well as light colour is reflected in the mood of the person perceived. In the advanced industrial age after the invention of light bulb, human reliance on the natural sunlight has reduced to a greater extent. But the inherent nature of lighting effect on human mood and sleep cycle has persisted till now. In the early stages of electrical lighting, we were limited to the light emitted due to heating of an element in an inert gaseous environment and the gas surrounding the heating element decided the colour of the emitted light. After advancement of technology, we moved towards fluorescent lighting, whose colour spectrum was close to overcast condition. After the development of semiconductor lighting i.e., LED (Light Emitting Diode), we gained a greater control on the intensity as well as the colour of light being emitted by the LED.

The two most important characteristics of light that must be considered regarding human perception are correlated colour temperature and illuminance level. The effects of illuminance on human perception have been thoroughly investigated, and many governments have established their own recommendations or standards for illuminance levels for different environments. In many standards and literature illuminance levels have been standardised and regulated for many purposes. However, the effects of Correlated Colour Temperature (CCT) of lighting on user comfort have received little attention in the field and the effects of CCT on human perception and learning performance remain less understood compared to the effects of illuminance level. At present almost all kind of illuminations are being provided with LED type of light fittings and so design aspects of LED for light with respect to CCT has been deliberated.



History of development of sources of light

What is a LED?

A light-emitting diode (LED) emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons (energy packets). The colour of the light (corresponding to the energy of the photons) is determined by the energy required for electrons to cross the band gap of the semiconductor. White light can be achieved through the combination of

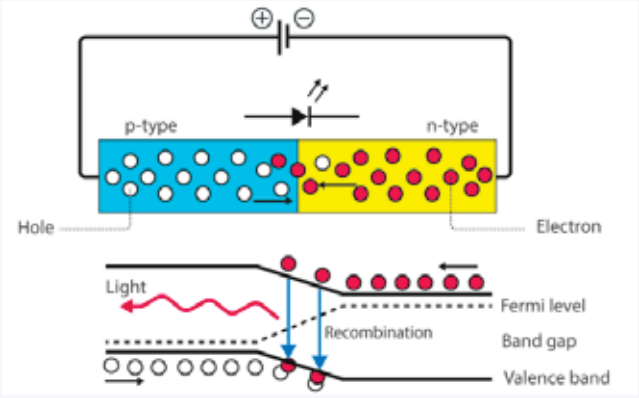
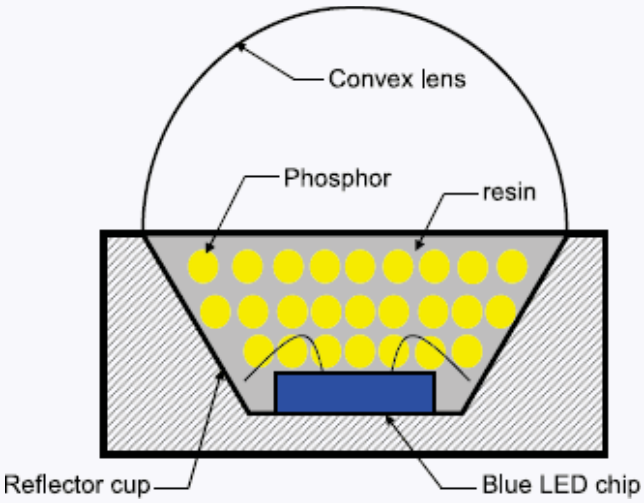


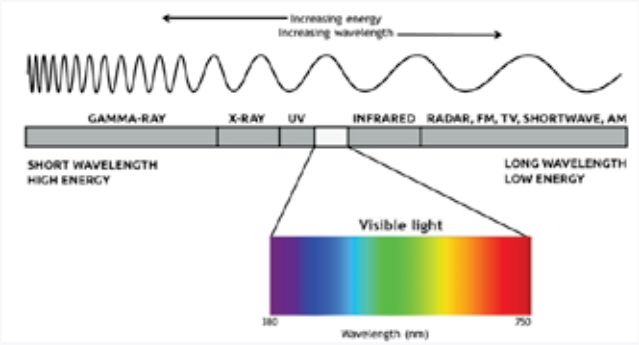
Figure 2: Light emission from LED



White light emission from Blue LED source

different LEDs in one light source, most commonly in the primary colours red, green, and blue (RGB-LED), or through phosphor conversion. In phosphor-converted LED light sources, a single LED is used together with a phosphor coating. The LED emits radiation in the ultraviolet or visible short wavelength part of the spectrum and causes the phosphor to emit radiation at longer wavelengths. The spectral power distribution of these phosphor-converted LED light sources typically comprises a narrow peak in the short wavelength range emitted by the LED and a much broader peak in the middle to long wavelength range emitted through phosphor conversion. The spectral power distribution may vary among different LED light sources because the LEDs may differ in the light they emit and because several types of phosphor coatings are available.

Light sources based on light emitting diodes (LED) has the advantages of being more economical and energy-efficient than traditional light sources such as incandescent, halogen, or fluorescent lamps. Moreover, LED lighting is equipped with tune-able illuminance levels and colour temperatures that can satisfy the requirements of end users. The efficiency of a light source is characterised by its luminous efficacy which is defined as the ratio of the luminous flux to the electrical power consumption, measured in lumens per watt (lm/W). Apart from luminous efficacy and lifetime, LED-based light sources differ from other conventional light sources in their spectral power distribution. The spectral power distribution of a light source is defined as the intensity of electromagnetic radiation emitted at each wavelength in the visible wavelengths range between 380 and 780 nm.



Visible light spectrum

The appearance of object colours is a function of the spectral power distribution of the light source and the spectral reflectance function of the illuminated object. The spectral power incident on an object's surface is partially reflected by the object, leading to the perception of colour when reaching the observer's eye. The human visual system reacts to "short" (around 450 nm), "medium" (around 530 nm) and "long" wavelengths (above 620 nm) with sensations of blue, green and red, respectively.

While tungsten-based incandescent and halogen light sources emit radiation in the whole range of the visible spectrum and are, therefore, referred to as continuous but LEDs do not. LEDs are known as narrowband light sources emitting light in a small part of the visible spectrum. Depending on their spectral power distribution, white light sources can have a bluish or a yellowish to reddish appearance. To further specify this appearance either the "Colour Temperature" or the "Correlated Colour Temperature (CCT)" can be used. Colour temperature (in kelvin, K) is determined by the temperature of a black body radiator whose spectral emission is characterised

solely by its temperature. With an increasing temperature of the black body radiator the emitted energy increases and shifts towards shorter wavelengths. Colour temperature can be applied to light sources which match (at least approximately) the radiation distribution properties of the black body radiator, such as incandescent lamps. However, the CCT is more commonly used because it can be applied to light sources with a radiation distribution different from that of a blackbody radiator, such as LED-based or fluorescent light sources.

What is Correlated Colour Temperature (CCT)?

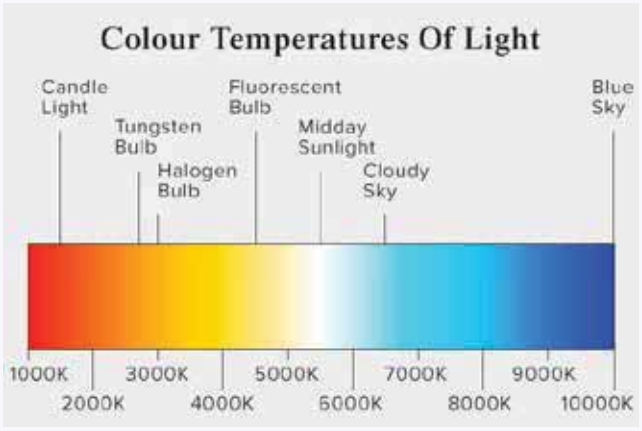
The CCT of any light source "is defined as the temperature of a black body radiator whose perceived colour most closely resembles that of the light source at the same brightness and under specified viewing conditions". It defines the colour, not brightness of a light source and is measured in Kelvin (K) and not degrees kelvin (°K). For reference purposes, a standard incandescent light is about 3000K, while the bright white xenon headlights of some newer cars are 6000K. CCT is a measure of the colour appearance of a light source, expressed in Kelvin (K). It describes the relative colour of a white light source, ranging from warm (yellowish) to cool (bluish) light. Warm white light has a CCT of around 2700-3000 K, while cool white light has a CCT of around 5000-6500 K. The higher the CCT, the cooler the light appears. The average CCT of summer sunlight at noon is about 5,500 K, in which all the objects appear true to their original colour. The source having CCT below and above this CCT, can render objects having predominance of red or blue colour respectively as shown below.

CCT of any light source is inversely proportional to



Visual effect of light's Colour temperature

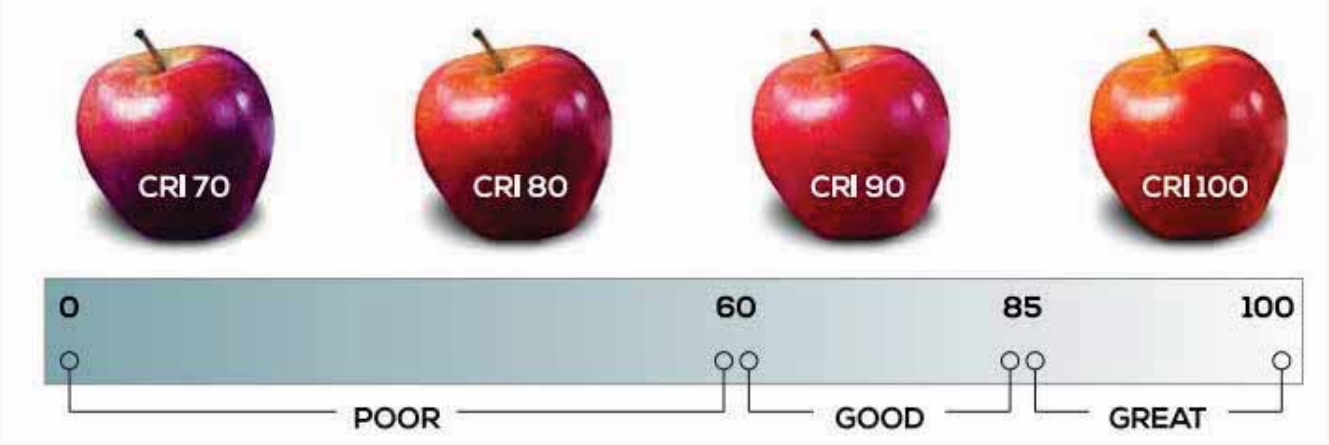
the wavelength of light it emits. Therefore, as the wavelength of light decreases, CCT increases. So CCT for blue colour light is higher than that for red colour. Light sources with different CCTs can render the colour of an object differently which is why the



CCT is taken into account in the calculation of the colour rendering index (CRI).

CRI (Colour Rendering Index)

Colour Rendering Index refers to how a light source renders the colour of other objects and surfaces. This is measured on a scale of 1-100 and the value closer to 100 denotes how accurate the colour of the object appears i.e. with respect to a light source of natural outdoor sunlight, which gives viewed objects accurate colour rendering. A CRI of 80 or



Colour rendering of light on an object

higher is generally considered good for most indoor lighting applications, while a CRI of 90 or higher is desirable for tasks that require accurate colour representation, such as in art studios or photography studios.

The CRI of a light source does not indicate the apparent colour of the light source; that information is given by the correlated colour temperature (CCT). The CRI is determined by the light source's spectrum. An incandescent lamp has a continuous spectrum, a fluorescent lamp has a discrete line spectrum; implying that the incandescent lamp has the higher CRI.

While the CCT is used to describe the appearance of the light itself, shifting from "warm" (yellow-red) to "cold" (blue) as the CCT increases, the CRI is used to describe the appearance of object colours under a light source. The CRI compares the rendition of test object colours illuminated by a test light source to a reference standard of the same CCT.

The higher the degree of accordance of the test object colours rendered by the test light source and the test object colours rendered by the reference standard, the higher is the CRI, with a CRI of 100 indicating complete accordance.

The colour temperature of a light source also affects how we perceive colours. Cooler, bluer light sources can make colours appear cooler, while warmer, yellower light sources can make colours appear warmer. Therefore, it is important to consider both CRI and colour temperature when selecting a light source for a specific application.

General categorization of white light on the basis of their CCT:

As per EN 12464-1:2021 white light for general illumination is categorized as follows:

Warm White Light

This category of white light has a CCT of less than 3300K. Warm white light has a yellowish tint and is often used in residential settings, such as bedrooms and living rooms, to create a cosy and relaxed atmosphere. Warm white light is used in bedside lamps to help prepare for sleep. Warm white light can have a calming effect on passengers and can help reduce stress and anxiety. It is also associated with comfort and relaxation, which is particularly important in long journeys. Warm white light is ideal for use in sleeping cars, where passengers need to relax and unwind. It can also be used in public spaces such as waiting rooms, where passengers may be waiting for extended periods.

Neutral White

Neutral white light has a CCT between 3300 K and 5300 K. This type of white light is often used in commercial and retail settings, as they provide a clean and crisp appearance and it has a more natural and balanced appearance that can help improve colour rendering. They can help to promote focus and alertness, making them a good choice for task-oriented environments.

Cool White Light

Cool white light has a CCT above 5300 K. It has a slightly blue tint and is often used in workspaces and hospitals where high levels of illumination are required. It can also be used in outdoor lighting, as it can enhance the perception of visibility in dark environments. Cool white light has an energising effect on passengers and can help increase alertness and productivity. It is ideal for use in areas where passengers need to stay awake and focused, such as dining cars and workspaces. Cool white light can also be used to create a sense of spaciousness, making a train car feel larger and more open. However, exposure to cool white lights in the evening can disrupt sleep patterns and negatively affect circadian rhythms as blue light can suppress melatonin, that body produces naturally at night to help you sleep.



Room illuminated with warm, neutral and cool white light

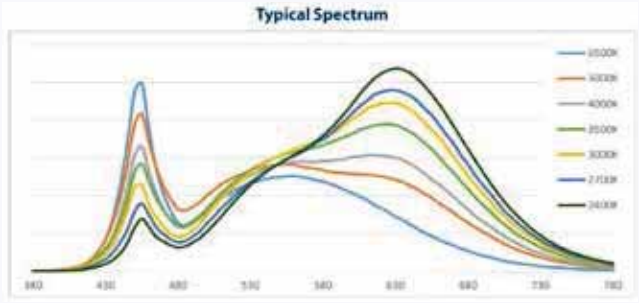
EN 13272-1:2019 (Railway applications — Electrical lighting for rolling stock in public transport systems) also advises lighting colour temperatures below 5000 K for reasons of visual comfort.

Effects of Correlated Colour Temperature (CCT) on Mood and Perception:

Lighting can influence the vision, biology, and behaviour of human beings. Appropriate lighting

conditions aid in promoting comfort, help in the development of positive mood, increase work efficiency and vigilance, enhance sleep quality, and improve creative performance. Moreover, applying appropriate illumination to different environments such as offices, museums, restaurants, or concerts could generate warmth, comfort, and a pleasant feeling among users. Light colour and temperature also create ambience, affects people's moods, and influences people's perception of temperature. More precisely, people perceive blue light as colder and red light as warmer. The CCT of LED lights can have a significant impact on the mood and perception of train passengers. Many researches have shown that warm white light is associated with relaxation and comfort, while cool white light is associated with alertness.

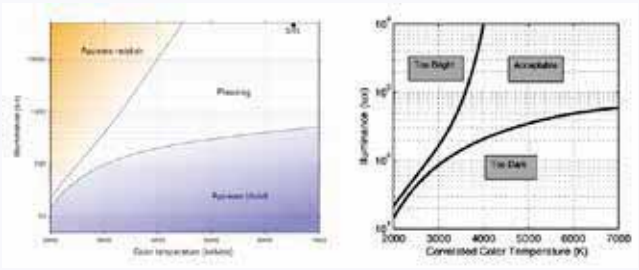
Therefore, in general it can be said that at the lower end, the 'warmer' light creates a relaxing, cozy feeling, like candlelight or incandescent lights. At the higher end the 'cooler' light is energizing and uplifting, like a clear blue sky. People dining in restaurants and resting in hotels are more comfortable with less bright and more warm lighting. There is no agenda of reading and writing in hotels/ restaurants, so higher CCT lighting is not required. Whenever and wherever, there is agenda of reading/ writing, higher CCT levels are recommended.



Spectral power distribution vs wavelength of lights of different CCT

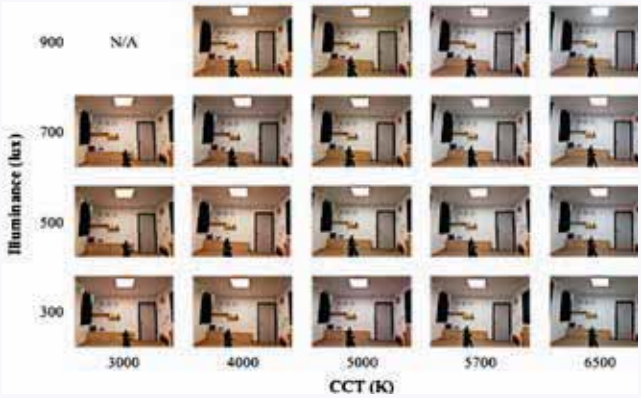
In train travel generally it is seen that people often rest during the journey and reading specific task is performed by the limited number of passengers. Hence a colour neutral (closer to natural light) lighting CCT 4,000 K-5,000 K may be recommended for the coach interior with a provision of reading light which caters to the lighting needs of only the reader.

Kruithof (1941) conducted a study on human perception of combinations of illuminance and CCT and found that people prefer high colour temperature sources at high illuminance levels and low colour temperature sources at low illuminance levels. The same has been described in comfort zone. People prefer high colour temperature sources at high illuminance levels and low colour temperature sources at low illuminance levels. The same has been described in comfort zone (Kruithof (1941)).



Showing impact of CCT and Illuminance on user perception. The comfort zone is the area shown as pleasing and acceptable

Min-Chih Hsieh and others (2020) study the effects of various CCT and illuminance level combinations on visual perception and their patterns under different lighting conditions. Five white light balances with different CCTs were created together with four levels of illuminance. Based on the patterns of visual perception, when the CCT increased with the illuminance levels, the participants' visual perception changed from dim, boring, and sleepy to intense, vivid, energetic, and bright. As the CCT decreased, the participants gradually perceived the lighting as warm and relaxing. As illuminance levels



The combinations of CCT and illuminance levels in an experiment

increased, dim and unpleasant feelings progressively changed to bright and pleasant ones.

Implications for the Transportation Industry:

The transportation industry can benefit greatly from the use of LED lighting with appropriate CCT, colour, and luminance level. Passengers are more likely to have a positive experience if the lighting is comfortable and appropriate for the task at hand. This can lead to increased customer satisfaction and repeat business.

Inspiration from the airline industry can be taken; they have applied the concept of lighting colour and intensity for the crowd control and unconsciously affect the public behaviour to have a greater control on their mood and satisfaction while boarding deboarding and during flight.

Further some researchers have shown that the proper use of cabin illumination can improve your flight experience. Airlines control the mood and ambience onboard by changing colours and light intensity. For example, a mood-setting function with coloured accents provides passengers with a relaxing transition between cabin lighting phases.

What will one passenger do if he wishes to stay awake once the cabin lights dimmed? The reading spotlight is available above each passenger seat and uses fiber optic and LED technology to allow passengers to adjust the intensity of the light as needed without bothering their neighbours. Furthermore, the lighting can artificially shorten the day during the flight so that passengers can acclimate to their destination's new time zone. If the passenger ever needed to find its way to the restroom in the middle of an overnight flight, in that case, there comes handy the contour lighting, which accentuates the aisle, seats, overhead bins, and other cabin features for effortless navigation.

Moreover cabin lights are being used as an activity indicator while boarding the flight cabin lights are set to brightest and higher CCT to induce a sense of alertness and make it easier to navigate them to their seats. When the flight is on runway light intensity is reduced and CCT is increased to calm down the passengers. After sometime when flight is airborne and cabin crew is giving instructions lights are once again brightened and CCT is raised to get the people's attention.

Many new advancements are also being explored for increased user comfort and better customer satisfaction. Lights of different CCT can be used to mark activity zones within the coach as there are many tasks which require keen attention and higher accuracy. There are also catering and hospitality staff onboard, hence it is required for them to have a task area which should be illuminated according to their need so that they can perform their work efficiently which in-turn will increase the satisfaction level of the passengers. The areas or workspaces designated for the catering and hospitality staff should be illuminated with the higher CCT lights which has an energizing effect can help increase alertness and productivity.

The Final Word:

As we are developing more modern trains with better passenger amenities and comfort. It is the need of time that we see coach lighting from the perspective of both illumination and CCT so that we can ensure the highest level of travel satisfaction in greater number of passengers. Selection of appropriate and tunable CCT and illuminance level of LED lights according to train requirement is important to ensure that passengers have a comfortable and enjoyable experience. The appropriate lighting can create a mood and atmosphere, that is conducive to the activities and needs of the passengers, while providing adequate visibility and comfort.■



Lighting inside an airplane cabin

Industry 4.0 and Law : A Dialectic Relationship

Dr Raju Narayana Swamy, IAS
Principal Secretary to Govt. of Kerala



The interface between law and technology has been summarized in the golden words of Daniel J. Gifford, "Law and technology interact when legal rules foster or retard the development of technology. They also interact when society decides that technology produces undesirable results and employs legal rules to contain or modify those results".

Law, as we are aware, is a set of pre-set rules meant for the purpose of keeping peace and security in society. It is a social engineering which means a balance between the competing interests in society. Technology, on the other hand, means the use of scientific knowledge for practical purposes or applications, whether in industry or in our everyday lives.

Industry 4.0 (i.e.) the digital industry employs a wide range of technologies which include:

a. Robotics
b. Mobile devices and 5 G
c. Internet of Things (IoT) platforms
d. Location detection technologies
e. Advanced human – machine interfaces
f. Authentication and fraud detection
g. 3 D printing
h. Smart sensors
i. Big analytics and advanced processes
j. Multilevel customer interaction and customer profiling
k. Augmented reality/wearables
l. On-demand availability of computer resources (Cloud)
m. Data visualization and triggered "live" training.

However the major components thereof can be classified under the following heads:

I) Cyber physical systems, Cloud computing
II) IoT
III) AI & ML
IV) Big Data

Needless to say, the interface of each of these technologies with the legal framework is complex. The internet infrastructure itself raises myriad legal concerns - ICANN jurisdiction, competition law and policy, network neutrality, infrastructure-sharing and

interoperability being the major ones. Similarly AI – powered devices come with a range of challenges, particularly on the fault front. The real dilemma associated with autonomous cars is – who is liable for damages resulting from accidents - maker or machine. Of course, suggestions have been put forth as to how liability of robots can be determined. These range from strict-liability approach (no fault required) to risk management approach (liability of a person who was able to minimize the risks). The legal community is also largely unanimous that liability of robots should be proportionate to the actual level of instructions given to the robot and its degree of autonomy. However, the crux of the issue with A1–powered devices is that as increasingly the decisions that they take become more and more removed from any direct programming and are in turn based more on machine learning principles, it becomes harder to attribute the question of fault.

Herein lies the importance of AI governance – the goal of which is to minimize potential risks from bias and maximize intended benefits. In particular, the legal framework must ensure that AI is

a. fair and impartial
b. transparent and explainable
c. responsible and accountable
d. safe and secure
e. compliant with data and privacy regulations as well as
f. robust and reliable.

In the Indian context, the focus must be on attuning the legal system to the pillars of AI governance (viz) AI IP and innovation, AI compute and systems, Skilling in AI, Data for AI and AI ethics. One must be all the more careful about generative AI which can introduce falsehoods into the copy it produces and bias into the text it generates. Needless to say, deep fakes form a big source of concern. They are the manipulations of facial appearance through deep generative methods. As they leverage powerful techniques from machine learning and AI to manipulate or generate visual and audio content that can easily deceive, dealing with the legal challenges posed by them is easier said than done.

Internet and robotics are not the only innovations where growth of technology brings forth legal puzzles. Another oft quoted example is 3D printing. First, it has serious security repercussions as it enables individuals - including terrorists - to manufacture any weapon comfortably. In fact, 3D printed guns have already been manufactured in US, Japan and Australia. Second, it has significant tax implications. Since product sold (CAD) is in the form of a digital file, it will not be subject to customs duties imposed on physical products. Third, 3D printing may increase the incidence of patent infringement. Consumer will merely need to procure digital file containing instructions for the 3D printer (CAD) and can make infringing copies at home. Fourth, issues of standards and interoperability will come into play here as well.

IoT also raises legal as well as ethical challenges. The first major issue is data security. As smart devices are always connected to the internet for information and system updates, there is a possibility of the devices being hacked. Second, continuous connection to the internet increases the risk of a spontaneous machine malfunction which in case of machines such as household heating can cause physical danger to the user. Third, without sufficient data protection measures, consumer privacy is vulnerable to violation. The devices have access to sensitive information such as present location, preferences and personal information of the user through the connected mobile devices. In the case of some manufacturers, data processing for the equipment is not conducted directly by the manufacturer or a subsidiary. It is in fact outsourced to a third party who may not adhere to the privacy policy sworn by the manufacturer. This leads to the risk of third party infiltration. Fourth, IoT suffers from standardization issues. At present IoT developers are using varied standards. Lack of standards contributes to data insecurity and privacy susceptibility. Fifth, spectrum policy of various countries and ITU will have to accommodate IoT.

Even an innovation like telemedicine raises myriad legal questions. This is all the more relevant, given the fact that medical platforms have witnessed a massive rise since the beginning of the COVID-19 pandemic. The Telemedicine Practice Guidelines were brought forth to bring clarity and certainty in the field. Though these guidelines delineate the liability of platforms with respect to obligations like privacy and due diligence with precision, one major avenue left out is negligence of doctors on a particular platform. Doctors can face individual sanctions from Medical Councils, but whether there can exist an additional liability on the platform is unclear. This lack of clarity is to be viewed in the backdrop of tort law where Courts have modified the

standard test of employer-employee relationship for vicarious liability and hold commercial hospitals vicariously liable for all negligence of their doctors. At the other end of the spectrum is intermediary liability wherein plain application of law results in no liability for any medical platform. All of this is further exacerbated by the sheer variations in business models. While certain platforms like Cure Mantra only provide online appointments and some such as Just Doc and Medimetry provide only online consultations, the majority of platforms (such as M Fine, Zoylo, Img and Practo) provide both online consultation and doorstep medicine delivery. There are also comprehensive care platforms like Bajaj Finsery Health that provide packages to users. Aside from these standard business models, there are creative ones too - a classic example being Lybrate that also provides a forum where doctors can answer user queries. Needless to say, such platforms represent trickier questions when addressing their liability.

In fact, all sharing economies (viz) peer-to-peer based activities of obtaining, giving or sharing access to goods and services pose legal challenges. Fixing of liability in such cases is complicated by their multiparty model. For example, ride - hailing service Uber claims no accountability for behaviour of drivers as it is merely an aggregator of taxis. This applies not only to tort but also to criminal liability cases. Again, sharing economies are forcing regulators to re look at licensing and business regulations. This is to be viewed in the light of Airbnb and Uber being able to bypass regulations - ranging from safety restrictions and zoning requirements to tax laws - due to their asset - light business models.

Online entertainment services (Over the top (OTT) Video Streaming services) too come with their bag of legal challenges. The first and foremost in this regard is net neutrality. OTT video streaming is sensitive to the distance from the subscriber as seamless delivery of videos requires higher bandwidth. Therefore such service providers enter into agreements with the ISPs for dedicated channel for their content. This induces ISPs to discriminate between various types of contents delivered by them violating the net neutrality principle. Second, data security and privacy are inextricably involved with these services due to large amount of data collected by the service providers. Third, OTT service providers are not subject to regulatory regimes that apply to operators like Idea, Airtel and Vodafone.

E - Payment systems also bring forth challenges in the legal arena. Since e-payment involves exchange of sensitive information (debit /credit card numbers, banking details, passwords etc.), data security is very crucial for protection of consumer privacy and prevention of theft or fraud. Second authentication is a major concern. Third, determining the relevant law that parties will be governed by in respect of electronic transactions may create problems, especially when the laws in Country A (where the company is registered) permit e-payment contracts whereas those in Country B (where the consumer is located) do not support such contracts. Fourth, legal recognition of digital currencies is a matter of concern given the fact that cryptocurrencies like bitcoin are not recognized in most jurisdictions. Though efforts have been made by the RBI to solve these risks – the recent push for card – on – file tokenisation vide the circular dated January 8, 2019 and the issuance of the Guidelines on Regulation of Payment Aggregators and Payment Gateways on March 17, 2020 being classic examples – they offer only suboptimal methods to solve such risks and do not meaningfully engage with the privacy related dimensions of financial data protection.

Cloud computing is another technological development that raises legal concerns. First, it entails storing of large amounts of data and therefore is automatically subject to data privacy and security concerns. Second, data ownership is a significant question. In the absence of a clear contract, the host can claim ownership over data even after termination of service. Third, extent of liability of the host for any data misuse or breach is a contentious topic. In cases where the client does not have bargaining power or the contract is not negotiable, the host can escape liability completely. Fourth, compliance of regulations related to tax, data protection, damages under contract etc. can be difficult due to absence of onshore facility. These concerns are over and above legal concerns resulting from the current data economy – which range from data protection and data localization to taxation of data flows and jurisdiction applicable to them.

All these legal complexities point out the need for law to ensure level playing field – not only for infrastructure development for the internet and its use, but also for the operation of e-commerce components. Appropriate laws are needed to ensure that the big players (Google, Apple, Facebook, Amazon, Uber, Twitter, Alibaba etc.) do not abuse

their market position and that entry barriers for new and small entrants are minimized. A word of caution is however needed here: while some issues need exclusive legal intention, others are better resolved through alternate approaches. So far globally three types of regulatory approaches can be observed - complete freedom (like US), no freedom (like Russia and China) and limited freedom (like EU) for digital business. Which approach must be embarked depends on the current economic and technological structure, nay its rapidly changing nature.

But the other side of the fence is also equally important. Technology can be transformed into an instrument to assist the enforcement of law.

With the advent of big data analytics, machine learning and artificial intelligence (AI), the fundamental questions of law enforcement and justice are being reconsidered across the globe. Law is based on two important aspects – predictability and precedence and many are of the opinion that AI can greatly help align these processes. While disagreements are galore as to whether these technologies represent a panacea or whether they will further exacerbate social divisions and endanger fundamental liberties, the two camps agree that the new technologies usher in important consequences. In fact, there are three main ways in which technology is already reshaping the judicial system. First and at the most basic level, technology is assisting to inform, support and advice people involved in the justice system (supportive technology). Second, technology can replace functions and activities that were previously carried out by humans (replacement technology) – the concept of online courts being a classic example. Finally, at a third level, technology can change the way that judges work and provide for very different forms of justice (disruptive technology), particularly where processes change significantly and predictive analytics may reshape the adjudicative role. It is at these second and third levels that issues emerge in terms of the impact of technology on the role and function of a judge. Questions raised in this context include

a) Can AI enabled programmes extract the accurate position of law from a mass of precedents?
b) Can robots decide questions of law?
c) Who should be accountable for semi- automated decisions?
d) How should responsibility be allocated within the chain of actors when the final decision is facilitated by the use of AI?
e) Is the “due process of law” denied to the accused when AI systems are used at some stage of the criminal procedure?
f) Can judgements be replaced by data?

These questions are all the more relevant now that AI has made a lot of inroads within justice systems – in Estonia for adjudicating small claims (robot judges), in China, Russia and Mexico for giving legal advice/approving pensions, in Malaysia towards supporting sentencing decisions, in Austria for sophisticated document management, in Colombia and Argentina for identifying urgent cases within minutes, in Abu Dhabi for predicting probability of settlement and in Singapore for transcribing court hearings in real time- to name a few.

Justice delivery is not the only domain wherein technology is ushering in transformation in the legal arena. Examples in this regard are galore from the spectrum of cyber law- a classic one being end-to-end encrypted (E2 EE) messaging. This form of cryptography allows messages only to be read by senders and their intended recipients. Content shared by users over E2EE channels is inaccessible even to service providers. The main advantage of E2EE is that it can provide individuals with a zone of privacy. But technology comes in here in the context of traceability – in the Indian context in the backdrop of Rule 4(2) of the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules 2021. The said rule mandates popular messaging services to facilitate identification of the 'first originator' of any message that is sent through their platforms in response to a court or government order. Implementation of this rule brings forth technological challenges as to how the 'traceability' mandate can be implemented without serious costs to usability, security and privacy.

One among the suggested solutions is storing 'hashes' of all messages. Hashing, it must be mentioned here, is a mathematical operation that converts any piece of information into a unique string of characters. It is computationally infeasible to retrieve the original piece of information from its hash. Service providers will retain the hash of each transmitted message on their servers. In the event of a lawful request to find the originator of a particular message, service providers can compute the hash of that message and compare it to all

preciously recorded hashes. This will help them identify the originators of the message.

Another suggested method involves attaching originator information to messages. A submission by Dr. Kamakoti to the Madras High Court described a proposal that service providers could modify their application to attach an additional piece of metadata to messages in the form of information about the originator of a message. Originator information refers to any identifier that can help track down an individual, such as a phone number or device identifier such as IMEI number assigned to cellular phones. This information will travel along with the message as it is forwarded and can subsequently be used to identify the originator.

Technology – law interface comes in when weighing the viability and ease of circumvention of these alternatives vis-à-vis their limitations which may range from weak attribution and weak identification to geo fencing limitations.

No discussion on law – technology interface will be complete without a reference to copyright law which has exhibited a rather ambivalent attitude and which shares a dialectic relation with technology. In fact, technology challenges copyright law and law tends to react initially by fighting and subsequently by encompassing new ways of exploiting copyrighted works developed by the new technologies, when necessary through reform of law. It triggers a cycle whereby technology enables new practices which are not encompassed within the law but are not excluded by law. On the other hand, law shapes technology by influencing emergence of certain new technologies as well as their design and architecture.

A classic trigger in the recent context is when internet morphed into the World Wide Web 2.0, by reason of availability of broadband connection (mostly wireless) and software programmes that enable creation and editing of digital content. But the challenge started much earlier – first with the invention of reprographic technology (photocopier etc.) and later with the arrival of video recorder which was accused of heralding the end of US film industry. In the 1980s, the Hollywood majors united in a campaign against Sony, the corporation that produced and commercialized Betamax technology – which enabled viewers at their own leisure to record onto videotape TV programmes. The challenge was that this permitted copyright infringement. This led to the Sony – Betamax decision in 1984 which set criteria to assess innovative technology in relation to copyright law. Beyond the introduction of the fair use of time – shifting and the reaffirmation of the private copy, the importance of this decision lies in the fact that it is one of a long series of battles between copyright law and technology. It demonstrates how a technology that initially seemed threatening may be transformed into an economic resource for right holders. It spells out that exclusive rights are not granted to block social progress but to promote development of society.

When digital technology met the internet, however, this mechanism became jammed. It generated first, a line of cases that turned the Sony - Betamax principle upside down (from Napster to Grokster), second the adoption of legal provisions (well known legislative responses to the challenges that internet posed to copyright law) and third the spread of DRM systems.

The need of the hour is to understand the state of technology today, its linkage with law and challenges posed by law – technology interface. What is needed is an analysis in the backdrop of the fact that inherent natures of legal systems and present technology-driven businesses, nay society, are diametrically opposite. To be more specific, laws and regulations are tailored to be stable whereas current technologically driven global environment is in a constant flux. Addressing this dichotomy that has added to the uncertainty wrought by technological revolution is easier said than done.

To put in simple terms, the road ahead will be a three-fold approach:

a. Creating a legal system which accounts for continually mutating technology.
b. Establishing an equitable ecosystem and ensuring a level playing field.
c. Identifying issues that need extensive legal intervention and sieving out those that are better resolved through alternate approaches.

Only then can a set of frameworks, policies and best practices which ensure that frontier technologies are used in an ethical and responsible way evolve, giving mankind the much needed respite from their evil effects, at the same time yielding the best possible benefits there from in a timely fashion . The option before the comity of nations and its denizens, nay netizens is amply clear.■

Test Your Knowledge

1 Recently, the Hon'ble Prime Minister has laid the foundation stone for redevelopment of how many railway stations?

(a) 553 (b) 508 (c) 620 (d) 500

2 Which redeveloped railway station was recently inaugurated by the Hon'ble Prime Minister?

(a) Gopalganj (b) Gopalpur (c) Gomtinagar (d) Prayagraj

3 Recently, Hon'ble Prime Minister has inaugurated how many ROBs/RUBs and laid the foundation stone?

(a) 1800 (b) 1500 (c) 554 (d) 305

4 How many railway projects worth ₹41, 000 cr. were inaugurated and the foundation stone was laid by Hon'ble Prime Minister recently?

(a) 2050 (b) 1800 (c) 2100 (d) 2000

5 On 6th August, 2023, the Hon'ble Prime Minister laid the foundation stone for the redevelopment of how many railway stations?

(a) 508 (b) 1500 (c) 554 (d) 120

6 On an average, how many kilometers of new railway lines are being laid by Indian Railways every day?

(a) 4 (b) 18 (c) 15 (d) 2

7 What is the name of the operation run by RPF to help pregnant women?

(a) Seva (b) Saheli (c) Matrushakti (d) Matritava Yojana

8 What is the name of the special train connecting pilgrimage sites?

(a) Maharaja Express (b) Bharat Gaurav Train (c) Amrit Bharat Train (d) Vande Bharat Train

9 What is the full form of LHB coach?

(a) Link Halfman Bush (b) Long Halfman Bush (c) Lafright Halfman Bush (d) Legal Halfman Bush

10 What is the name of the train being run to transport farm produce?

(a) Gramin Bharat Train (b) Farm Production Train (c) Krishi Train (d) Kisan Rail

Right Answers

1- (a) 2- (c) 3- (b) 4- (d) 5- (b) 6- (a) 7- (c) 8- (b) 9- (a) 10- (d)



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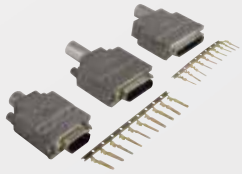
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