लोक नीति शोध केन्द्र PUBLIC POLICY RESEARCH CENTRE

Modi @ 8

'AatmaVishwas se AatmaNirbharta'

"Building Mega Bharat"

Modi @ 8: 'AatmaVishwas se AatmaNirbharta'

"Building Mega Bharat"

MINISTRY OF RAILWAYS

MINISTRY OF SHIPPING

MINISTRY OF POWER

MINISTRY OF CIVIL AVIATION

MINISTRY OF ROAD TRANSPORT AND HIGHWAYS

Public Policy Research Centre

UNDER THE GUIDANCE OF

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PREFACE

India is one of the fastest growing economies in today's world. Country's economy is estimated to grow at 9.2% during the current fiscal year (2022-23) to become third largest economy globally. 'Infrastructure' sector is a key driver for the Indian economy which is highly responsible for propelling India's overall development and enjoys intense focus from Union government for initiating policies that would ensure time-bound creation of world class infrastructure in the country. To achieve this significant goal building robust economy, the its pillars in terms of connectivity and transport such as national highways, airways, railway, shipping ways, power and renewable energy needs to be strengthened. The infrastructure in these sectors is the boon for creation of big markets and trading opportunities. Good infrastructure provides access to markets and various trading opportunities. Keeping this in mind, the Bharatiya Janata Party led Union government has been relentlessly working under the visionary leadership of Prime Minister Shri Narendra Modi to reach the milestone of USD 5 trillion economy.

The elected governments are duty bound to deliver the best for the development of the society. With the science and technology, the market aspirations have to be fulfilled with best of the infrastructure facilities. India has immense potential to emerge as the global leader when it comes to the international trade and commerce. The vision of the country is certainly possible with the visionary leadership it has in the form of Prime Minister Shri Narendra Modi. Therefore, on the occasion of completion of 8 years in the office, it is imperative to take the review of the work done by the Union Ministries that are responsible for building transport and connectivity along with allied infrastructure endeavours.

With the impeccable work under the mantra of "Sabka Saath, Sabka Vikas, Sabka Vishwas Aur Sabka Prayas", the dream of making India a USD 5 trillion economy is under reach and not the mere mirage on the eve of Amrit Kaal as envisaged by Prime Minister Shri Narendra Modi. The analyses and documents show that the BJP government has upheld the integrity of the oaths. This report is the outcome of a study conducted by the Public Policy Research Centre on the activities of the BJP-led Union Government since 2019 with respect to conserving the environmental, whose mettle has been recognised globally. The report goes into depth on how development activities were carried out, as well as how the current government dealt with long-standing difficulties and demands in the best interests of the nation.

Dr Sumeet Bhasin
Director
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INTRODUCTION

'Infrastructure' has always been the top priority of NDA government, whether the Union government which was headed by former Prime Minister Shri Atal Bihari Vajpayee or the current government under the leadership of Prime Minister Shri Narendra Modi. Under the NDA – I government, India had witnessed tides of mega infrastructural works like Golden Quadrilateral project and arteries of roads in villages under Pradhan Mantri Gram Sadak Yojana. Following the great legacy, the current Union government led by Prime Minister Shri Narendra Modi has been working to build world class infrastructure to make India a vibrant economy. It is also visible in initiatives like 'Pradhan Mantri Gati Shakti'- National Masters Plan wherein 24 digital systems of six Union ministries are being integrated through Unified Logistic Interface Platform (ULIP) to build a synergy among various Union government for targeted outputs.

Moving in the direction to make India a global economic leader, Prime Minister Shri Narendra Modi has envisaged to make India a USD 5 trillion economy by 2024-25. In fact, all the crucial and pivotal steps undertaken by the Union government are noteworthy. For e.g., benefits of various schemes are being distributed through Direct Benefit Transfer (DBTs) by which an amount of Rs. 1,70,000 crore is saved. Thus, Union government is able to direct these funds towards building new infrastructural projects. This seems to be normal, but is huge transformation. Moreover, the Gross Domestic Product (GDP) in dollar terms has already crossed USD 3 trillion as of February 2022. Country's economy is estimated to grow at 9.2% during the current fiscal year (2022-23) and with this, it would become third largest economy in the world. One of the crucial components that drive and sustain economic growth in a country is its 'infrastructure', which is critical for achieving manufacturing competitiveness. It helps in building productive capacity by bridging connectivity gaps, reducing distribution and trade costs, and facilitating the sharing of the benefits of growth with poorer groups and communities, among others.

With the clarion call of Aatmanirbhar Bharat embarked by visionary Prime Minister Shri Narendra Modi India's connectivity infrastructure growth has been attaining all time huge records. Right from launch of project Sagarmala till the launch of Pradhan Mantri Gati Shakti National Master Plan, every project is being carried out keeping in the mind to make India $ 5 trillion economy by 2024-25. It is important to note that out of 948 routes, 415 routes involving 65 airports including 8 heliports and 2 water aerodromes have been operationalized under UDAN. And as on 31st March 2022, total 415 routes are functional. Farmers transporting their yield by air under Kisan Udan and by railways under Kisan Rail as well. On the other hand, despite the pandemic, the Bharatiya Janata Party Government have worked tirelessly and constructed record 13,298 km of highways in FY21, with a record of 37 km per day 2021 from 11 km per day till May 2014. Furthermore, the Ministry of Railway has reached its electrification goals under which three of its zones are 100% electrified. The punctuality of Mail/Express trains has been increased to 92.55% during 2021-22 from 74.21% in 2019-20 with massive increase in capital expenditure of Rs. 10.68 lakh crore in 2022-23 (2.9% of GDP). The Ministry of Shipping, Ports and Waterways has vowed to make India as a hub ship recycling with accession to the Hong Kong convention. India is the 16th largest maritime country in the world which has 12 major and 205 noti-

fied minor and intermediate ports. The capacity of major ports, which was 871.52 million tonnes per annum (MTPA) at the end of March 2014, has increased to 1,560.61 MTPA, a 79% increase. Whereas, emerging as the world leader in renewable energy, the relentless endeavors of Union government has left the marks in its trajectory. India's Nationally Determined Contributions (NDC) under the Paris Agreement for the Period 2021- 2030 aims at reducing the emissions intensity of its GDP by 33% to 35 % by 2030 and to achieve about 40 % cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030 with the help of the transfer of technology and low-cost international finance. India has achieved a cumulative installed renewable energy capacity (excluding large hydro) of 92.54 GW out of which 5.47 GW was added in the period April 2020 to January 2021. During the period from April 2014 to January 2021, the installed RE capacity of India has increased by 2.5 times, and in the same period, the installed solar energy capacity has increased 15 times. Globally, India stands 4th in R.E. power capacity, 4th in Wind power, and 5th in Solar Power capacity. India is the only country among the G20 nations that is on track to achieve the targets under the Paris Agreement.

The detailed analysis of the Ministries viz. Civil Aviation, Railways, Road Transport and Highways, Power, New and Renewable Energy, Ports Shipping and Waterways will compel one to understand that India is marching in right direction with appropriate pace to achieve its target goal of building an infrastructure which will sustain for many decades. The vision of Prime Minister Shri Narendra Modi coupled with relentless work by the Ministries assures that India's connectivity infrastructure has been contributing in its way to become world's b iggest economic market in 'Amritkaal'. Thus, it become imperative to study the initiatives taken by the Union Government which made India grow on to the path of Infrastructural Empowerment.

Air Infrastructure

The civil aviation industry in India has emerged as one of the fastest growing industries in the country during the last three years. India has become the third largest domestic aviation market in the world and is expected to overtake United Kingdome to become the third largest air passenger market by 2024. According to the International Air Transport Association (ITIA), India is also expected to overtake China and the United States of America in the next ten years, by 2030. To cater to the rising air traffic, the Ministry has envisaged increasing the number of operational airports to 190-200 by FY-40. It is imperative for the government to build such an infrastructure in civil aviation to offer affordable and convenient travel for the common passenger throughout the country.

Major Initiatives

Regional Connectivity Scheme (RCS) – Ude Desh Ka Aam Nagrik (UDAN)

The Ministry of Civil Aviation (MoCA) had released the National Civil Aviation Policy in 2016 (NCAP 2016) with an objective of "enhancing regional connectivity through fiscal support and infrastructure development". In pursuance of the same, Regional Connectivity Scheme (RCS) - Ude Deshka Aam Nagrik (UDAN) had launched on 21st October, 2016 to stimulate regional air connectivity and making air travel affordable to the masses. An airport which is included in the awarded routes of UDAN and requires upgradation/development for commencement of RCS operations, is developed under this scheme.

As on 31st March 2022, Airports Authority of India (AAI), the Implementing Agency (IA), has awarded 948 valid routes across length and breadth in the country under Regional Connectivity Scheme (RCS)-UDAN. Out of 948 routes, 415 routes involving 65 airports including 8 heliports and 2 water aerodromes have been operationalized under UDAN. And as on 31st March 2022, total 415 RCS routes are functional.

Krishi UDAN

Krishi UDAN scheme was launched in August 2020, on international and national routes to assist farmers in transporting agricultural products so that it improves their value

realisation.

Under Krishi Udan 1.0, the waiver of landing, parking, Terminal Navigational Landing Charges (TNLC) and Route Navigation Facility Charges (RNFC) by Airports Authority of India for Indian freighter and P2C (Passenger-to-Cargo) aircraft was available if agri-produce account for over 50% of total chargeable weight of cargo carried.

Krishi Udan Scheme 2.0 was announced on 27 October 2021 enhancing the existing provisions, mainly focusing on transporting perishable food products from the hilly areas, North-Eastern States and tribal areas. For facilitating and incentivizing movement of agri-produce by air transportation, Airports Authority of India (AAI) provides full waiver of Landing, Parking, TNLC and RNFC for Indian freighters and P2C Aircrafts primarily around 25 airports focusing on North Eastern, Hilly and Tribal region and 28 airports in other regions/areas.

During the Financial Year 2020-21, 84,042 Metric Ton (MT) and in Financial Year 2021-22 (till December, 2021) 92,266 Metric Ton (MT) of perishable air cargo was handled at AAI managed airports in domestic as well as international sector. A total of 1,08,479 Metric Tonne perishable cargo (International + Domestic) was handled in Financial Year 2021-22 (till 28 Feb., 2022). Subsequently, other 28 AAI airports have been included in the Scheme. Now a total of 53 airports are included in the scheme.

Flying Training Organization (FTOs)

The Ministry has taken several steps to address the shortage of pilots in the country. These include the following-

- Establishment of India's largest flying academy - Indira Gandhi Rashtriya Udan Academy (IGRUA) at Amethi (Uttar Pradesh) - has been permitted to carry out pilot training in Gondia (Maharashtra) and Kalaburagi (Karnataka) to enhance its flying hours and aircraft utilization, which get severely affected during winter months due to low visibility. IGRUA has commenced operating on weekends and all holidays. It completed 19,019 flying hours during the year 2021 as compared to 15,137 hours in the pre-Covid year 2019, an increase of over 25%.
- On 12th April 2022, the Minister of Civil Aviation Shri Jyotiraditya M. Scindia and the Chief Minister of Assam Dr. Himanta Biswa Sarma have inaugurated the first Flying Training Organization (FTO) for North Eastern Region in Lilabari, Assam.
- AAI issued award letters on 31 May 2021 and 29 October 2021 for nine FTOs to be established at five airports i.e., two at Belagavi (Karnataka), two at Jalgaon (Maharashtra), two at Kalaburagi (Karnataka), two at Khajuraho (Madhya Pradesh) and one at Lilabari (Assam).
- 6 airports including Lucknow, Ahmedabad, Mangaluru, Jaipur, Guwahati and Thiruvananthapuram handed over for management under the PPP model. Three airports including Kushinagar, Kurnool and Sindhudurg have been operationalized this year under RCS-UDAN scheme. Dehradun terminal was launched and foundation stone laying ceremony done for Jewar international airport.

E- Governance for Civil Aviation Project (e-CGA):

In view of reducing time and specific constraints with a strong desire to provide efficient, effective and transparent services to the stakeholders, DGCA had embarked on the ECGA project in December 2019. Phase-1 services of the e-Governance (e-GCA) project of Directorate General of Civil Aviation (DGCA) was launched on 30th December 2019.

With this launch, the issue of Commercial Pilot License (CPL-A) with Flight Radio Telephony Operators License (FRTOL) and Instrument Rating has been automate. Besides issue of CPL-A, issue of Class 1 renewal Medical Assessment to the aspirant pilots has also commenced though e-GCA. This will facilitate timely issue of Medical Assessment Certificate to the aspirant pilots. Around 300 services of the eGCA have been implemented.

E-Sahaj

100% security clearances pertaining to the Ministry of Civil Aviation have been made online on E-Sahaj online portal launched by the Ministry of Civil Aviation. The portal is operational for granting clearances in respect of 24 categories.

Digital Sky (DigiSky)

Remotely Piloted Aerial Systems (RPAS), popularly referred to as drones, are a technology platform with wide-ranging applications. In August 2018, India had announced the release of its Civil Aviation Regulations (CAR) to enable safe flying of RPAS in India. It was launched in December 2018 to start registration of drones, pilots, and operator's registration. The Digital Sky Platform is built to evolve with the evolving needs of this rapidly changing industry. As on 21st April, 2022, 22 drone models, 1434 Unique Identification Number (UNI) and 29,459 Device Acknowledgement Number (DAN) are issued.

Legislative steps for regularization of drones

To regulate the operations of Drones, to promote the manufacturing of Drones in India under Atma Nirbhar Bharat and to facilitate training of Drone operators, the following steps have been taken by Ministry of Civil Aviation-

- Unmanned Aircraft System (UAS) Traffic Management (UTM) Policy framework, 2021 has been released on 24 Oct 2021 to enable complex operations of drones and increase the overall safety in the UTM airspace.
- With a view to enhance the training structure, permissions granted to various organizations such as Central / State Govt, Universities, manufacturers, FTOs, Non-Scheduled Operators Permit holders (NSOPs), Scheduled Operators Permit holders (SOPs), Maintenance Training Organizations (MTOs) to undertake drone training.

Change in dynamics of traffic at Indian airports in the post-pandemic era

- Major Indian airports have undertaken best possible precautions during Covid-19 pandemic. From a disastrous 2020 to a turbulent 2021, India's aviation ecosystem has been taking steps towards restoring normalcy or at least towards being part of what is often described as the new normal.
- With a footfall of 3,71,39,957 passengers, Delhi airport continued to lead the airport

charts in the country; its lead has been increasing all these years, with Mumbai airport continuing to be second with just 1,97,86,522 passengers. The third spot was bagged by Bengaluru airport, which recorded 1,60,73,009 passengers in 2021.

- Airports in tourist states like Goa, Ahmedabad and Kolkata are witnessing highest ever air traffic which is a positive sign of new normal.

Sr. No.	Major tourist Airports	Increased % in footfall post Covid-19
1.	Panaji (Goa)	78%
2.	Ahmedabad (Gujarat)	21%
3.	Delhi	40%

Management of COVID-19

Life-Line UDAN

Ministry of Civil Aviation launched 'Lifeline UDAN' on 26.03.2020 during pandemic COVID-19, when scheduled domestic flight operations were suspended from 25th March, 2020. Lifeline UDAN was an initiative to ensure a steady supply of essentials as well as medical supplies, PPEs (Personal Protective Equipment), test kits etc. to all parts of the country. 588 flights were operated under Lifeline Udan operations by Air India, Alliance Air, Pawan Hans Limited and some private airlines till 28th May, 2020. Approximately 1000 ton of cargo was transported by the Lifeline Udan flights covering an aerial distance of 5,45,000 km.

DIGI YATRA

DIGI Yatra policy had been launched by the Ministry in August 2018, which intends to provide seamless and hassle-free passenger experience at Indian airports, without the need for verification of ticket and ID at multiple points. It aims to simplify the passenger processes at various check points in the airport right from the terminal entry gate to check-in and boarding gates.

Air Transport Bubbles

'Air Transport Bubbles' or 'Air Travel Arrangements' are temporary arrangements between two countries aimed at restarting commercial passenger services when regular international flights are suspended as a result of the Covid-19 pandemic. They are reciprocal in nature, meaning airlines from both countries enjoy similar benefits. As on 23rd April, 2022, India has Air Bubble arrangements with 37 countries viz. Afghanistan, Australia, Bahrain, Bangladesh, Bhutan, Canada, Chile, Ethiopia, Finland, France, Germany, Iraq, Japan, Kazakhstan, Kenya, Kirgizstan, Kuwait, Shri Lanka, Maldives, Mauritius, Nepal, Nederland, Nigeria, Oman, Qatar, Russia, Rwanda, Saudi Arabia, Singapore, Seychelles, Thailand, Tanzania, U.A.E., U.K., Ukraine, U.S.A. and Uzbekistan.

Road and Highways Infrastructure

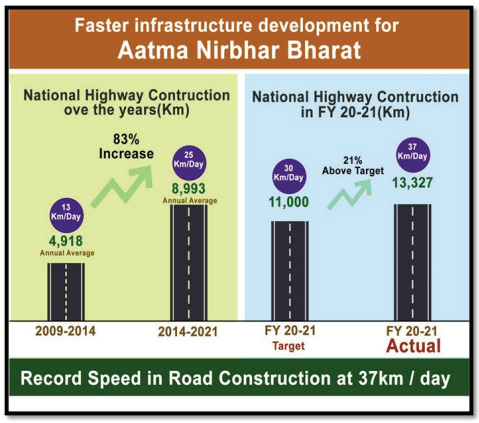
Scripting country's growth story, India has second-largest road network globally, spanning over total of 63.72 lakh km. This comprises National Highways, Expressways, State Highways, Major District Roads and Village Roads. This road network transports 64.5% of all goods in the country and 90% of India's total passenger traffic uses road network to commute. The pulsating economy of a country depends on the roads that serve as its arteries. Therefore, road transport has emerged as a dominant segment with a share of 4.8% in India's GDP. The Union government has allocated Rs. 111 lakh crores under the National Infrastructure Pipeline for FY 2019-25. Earlier in 2015, India embarked upon Bharatmala Pariyojana to connect the entire country through a network of highways, a steady growth observed since. The Ministry has approved the implementation of 34,800 km of 23 new national highways till 2025, with an outlay of Rs. 5,35,000 crores. Despite the pandemic lockdown, India constructed 13,298 km of highways in FY21, with a record of 37 km per day in March 2021. Moreover the Golden Quadrilateral project initiated under Pradhan Mantri Gram Sadak Yojana in late 2000 connected the hinterland with various critical financial centres and cities, thereby boosting economic growth.

Major Initiatives

Construction of National Highways

2019

During 2019-20, projects with about 8948 km length were awarded and completion was achieved in about 10,237 km length of roads. The rate of development of roads had increased significantly from about 11.7 km during 2013-14 to about 28 km.



2020

During 2020-21, projects with about 13,327 km length were constructed. Pace of construction had increased from 12 km per day in 2014-15 to 37 km per day in 2020-21 (by more than 3 times). The Ministry had scaled new heights in expanding the Highway infrastructure throughout the country, despite nation-wide lockdown due to Pandemic COVID-19.

Till April, 2022

Ministry envisaged to construct about 60,000 km of National Highways during the five-year period from 2019-20 to 2023-24, of which 31,609 Km has been constructed up to February-2022 and the balance length of about 28,391 Km is planned to be constructed in the remaining period from March-2022 to the end of the financial year 2023-24.

National Highway Projects

Bharatmala Pariyojana Project:

The Cabinet Committee on Economic Affairs approved the implementation of an umbrella programme for the National Highways – "Bharatmala Pariyojana Phase-I" on 24th October 2017, for construction/ up-gradation of National Highways of 34,800 kms length over a period of 5 years (2017-18 to 2021-22) at an estimated outlay of Rs. 5,35,000 Crore. As on March 2022, out of 34,800 km length envisaged for development under Bharatmala Pariyojana Phase-I in the Country, NH projects comprising length of 20,411 km with cost of Rs. 6,18,686 crores have been awarded and 8,134 km of project length has been constructed.

Bharatmala Pariyojana includes the development of 35 Multi-modal Logistics Parks (MMLPs) at various locations across the country. These MMLPs are being developed on a 'Hub and Spoke' model and being implemented by NHAI and NHIDCL (in North-East India). The MMLP at Jogighopa (Assam) is the first project for which development work has been initiated. This is the only MMLP project till now, which is proposed to be entirely funded by the Government of India and is implemented by NHIDCL. Other MMLPs on locations such as Chennai, Nagpur and Bengaluru are at advanced stages of formation of special purpose vehicles. Proposed MMLPs include Guwahati, Valsad, Patna, Vijayawada, North Punjab, Cochin, Kandla, Jammu, Raipur, Solan, Bhatinda, Sundargarth, Bhopal, Vishakhapattanam, Hisar, Panaji, Kota, Nashik, Jagatsinghpur, Ambala, Kolkata, Jaipur, North Gujarat, Delhi-NCR, Sangrur, Surat, Pune, Coimbatore, Hyderabad, Mumbai and Indore.

Parvatmala – An efficient and safe alternate transport

Union Finance Minister Nirmala Sitharaman, announced the National Ropeways Development Programme – "Parvatmala" – which will be taken up on PPP mode. Contracts for eight ropeway projects for a length of 60 km would be awarded in 2022-23.

Char Dham Pariyojana

The Ministry has taken up separate programme for connectivity improvement for Char-Dham (Kedarnath, Badrinath, Yamunothri & Gangothri) in Uttarakhand. Out of total 53 projects in about 890 km under entire Chardham Mahamarg Pariyojana, 38 works in 647 km costing Rs. 8,379 crores have been awarded out of which 25 works amounting to Rs. 6,470 cr. in length of 474 km have commenced and 13 works amounting to Rs. 1,908 crores in 172 km have been completed. Overall, 561 km length have been completed so far. Total expenditure of Rs. 5,730 crores have been incurred so far. The projects are targeted for completion by December, 2024.

Delhi-Meerut Expressway (DME)

On April 2021, project is completed and opened to the traffic. It has fulfilled the promise of reducing travel time between Delhi-Meerut from 2.5 hours to 45 minutes. It aims to provide faster and safer connectivity between Delhi and Meerut and beyond this, with Uttar Pradesh and Uttarakhand.

Delhi-Vadodara Expressway

A Greenfield alignment between Delhi – Vadodara with a length of 844 km through Sohna, Dausa, Jaora, Ratlam, Godhra, which reduces the travel distance between Delhi – Vadodara by around 150 km, is being developed. As on April 2022, work of 425 km has been completed.

Vadodara- Mumbai Expressway

It is a Greenfield alignment between Vadodara – Mumbai with a length of 352 km has been finalized. As on April 2022, work of 97 km has been completed and 267 km work is in implementation stage.

Delhi-Mumbai Expressway

Being developed at a cost of 98,000 crores, the 1380 km long Delhi Mumbai expressway will be the longest expressway in India. It will enhance connectivity between National Capital, Delhi and Financial Capital, Mumbai. It covers the States of Delhi, Haryana, Rajasthan, Madhya Pradesh and Gujarat. It was started in March 2019 and contracts for more than 1,200 kms have already been awarded and is under progress. As in April 2022, work of 529 km is completed and 1,139 km is under implementation stage. The complete expressway is planned to be completed by Mar' 2023.

Amritsar - Bhatinda – Jamnagar Corridor

762 km long Access controlled highway will provide direct connectivity to several economic hubs in Punjab, Rajasthan and Gujarat. As on April 2022, construction of 398 km is completed whereas, work of 762 km is under the stage of implementation.

Raipur – Vishakhapatnam Corridor

464 km corridor connecting Raipur to the East Coast through Chhattisgarh, Orissa and North Andhra Pradesh will improve connectivity and thrust economic development in the region. Till April, 2022, work on 57 km is under implementation stage.

Chennai Salem Corridor

277 km access-controlled corridor will provide 60 km shorter and faster connectivity between industrial districts of western Tamil Nadu and Chennai. As of February 2022, the Chennai Salem Corridor is in pre-construction stage with studies being undertaken.

Nagpur-Hyderabad-Bangalore (NBH) Expressway

It is proposed to be 1,100 km long and will connect the cities of Nagpur in Maharashtra, Hyderabad in Telangana and Bengaluru in Karnataka. It is expected to cost Rs 35,000 crore.

Ambala-Kotputli Corridor

Contracts for the entire corridor of length 310 km have been awarded. As in April 2022, work on 303 km has been completed. 70% of the work is completed and the project is scheduled to open for traffic in 2022. Corridor provides direct connectivity between Ambala (on NH 44) to Kotputli.

Delhi-Amritsar-Katra Expressway

DPR is completed by NHAI and the work is under progress and work of 93 km is under implementation stage (till April 2022). Total work is scheduled to complete in 2023. 633 km long expressway is connecting Jammu, Kartarpur and Amritsar. The distance between Delhi and Katra will now be reduced to 588 km, and the travel time will also be reduced by 5 hours.

Delhi-Dehradun Economic Corridor

On December 4, 2021, Prime Minister Narendra Modi laid the foundation stone for the Delhi-Dehradun economic corridor, which will be built at a cost of around Rs. 8,300 crores (from Eastern Peripheral Expressway Junction to Dehradun). 210 km long corridor providing shorter (Appx.25 km), faster connectivity between Delhi & Dehradun.

Banglore-Chennai Expressway

Officially NE-7, Banglore-Chennai Expressway is under construction 4-lane access-controlled road with a route alignment connecting Hoskote near Bengaluru, Karnataka with Sriperumbudur near Chennai, Tamil Nadu.

Anishabad-Aurangabad-Hariharganj section of NH-98 in Bihar

The work was started on 13th August 2014 with a sanctioned cost of Rs. 360.50 crore and was completed on 24.10.2019.

Chenani – Nashri Tunnel

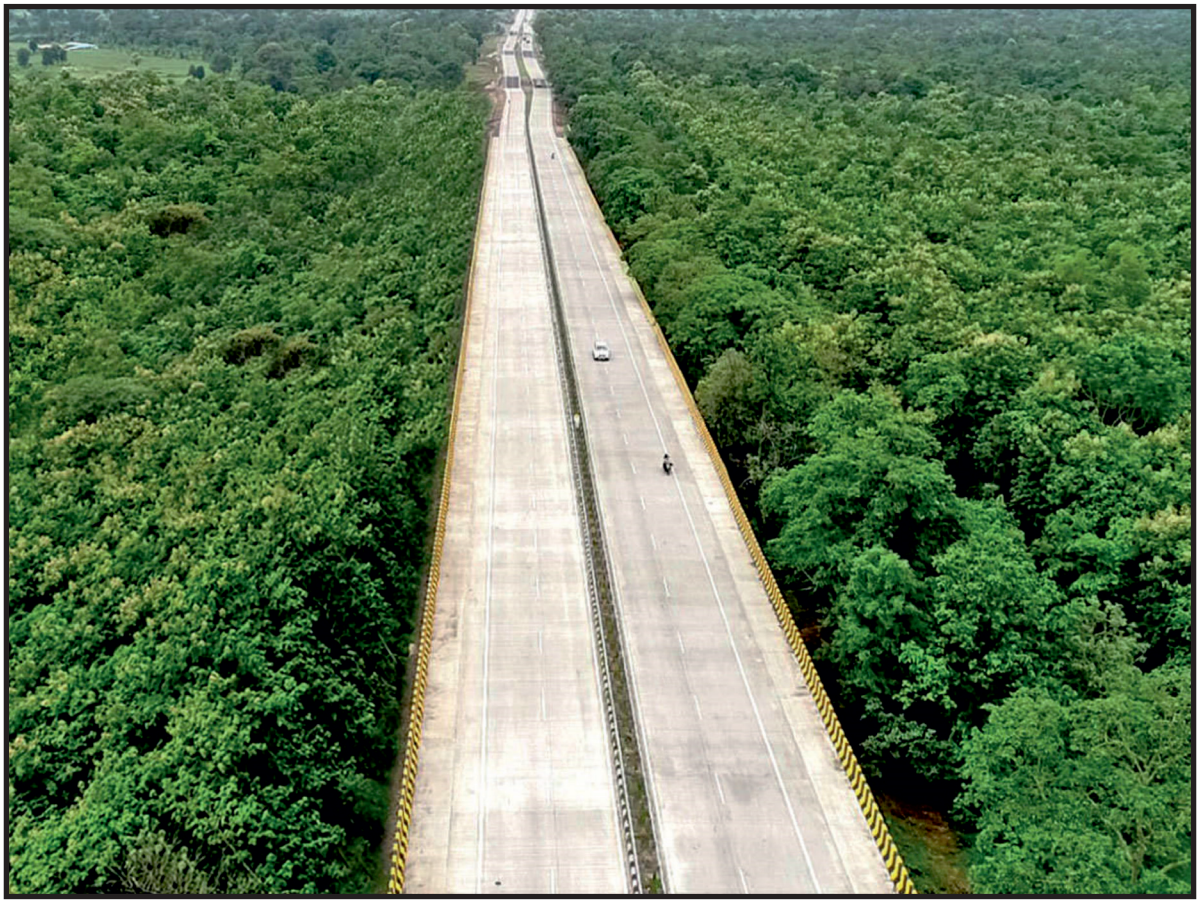
The project reduced the distance between Jammu and Srinagar on NH1 by 29 km, leading to a time saving of 1 hour 30 minutes and fuel savings of approximately Rs. 27 lakhs per day.

Dhaula-Sadia Bridge

The project provided direct connectivity between eastern Assam and Arunachal Pradesh and has facilitated numerous hydro power projects coming up in the Arunachal Pradesh.

Other Key Initiatives

- Prime Minister Shri Narendra Modi inaugurated the 16 km Varanasi Ring Road project and Varanasi – Ghazipur (72 km) highway project.
- Sovereign Green Bonds- Union Finance Minister has announced that the government that it will issue 'Sovereign Green Bonds' in FY23 as part of its overall market borrowing to mobilise resources for Green Infrastructure.
- Union Minister for Roads has inaugurated four National highways projects worth Rs. 3037 crores with total length of 146 km in Mirzapur (UP) and laid foundation stone for three NH projects in Jaunpur which will cover 86 km with a total cost of Rs 1,123 crore.
- Other major completed projects include- Chambal Bridge, New Brahmaputra Bridge, Dibang- Lohit River Bridge and Babatpur-Varanasi Project, among others.
- Other ongoing projects include Zojila Tunnel, Kosi Bridge in Bihar, MG Setu in Bihar, Vikramshila Bridge on NH-131B and Nechipu-Hoj in Arunachal Pradesh. Union Minister Shri Nitin Gadkari laid the foundation stone for 25 National Highway Projects of total length 257 Km with an investment of Rs 11,721 crore at Doda in Jammu & Kashmir. Prime Minister laid the foundation stone for four laning of five sections of Shri Sant Gyaneshawar Maharaj Palkhi Marg (NH-965) and three sections of Shri Sant Tukaram Maharaj Palkhi Marg (NH-965G) at Pandharpur in Maharashtra through video conferencing in November.
- Till April, 2022, total 22 Greenfield highways (5 Expressways comprising length of 2,485 km with cost of Rs. 1,63,350 crore & 17 Access Controlled Highways comprising length of 5,816 km with cost of Rs. 1,92,876 crore) have been envisaged for development.



- The Ministry of Road Transport and Highways has launched 'National Electronic Toll Collection' (NETC) program which provides for collection of user fee through FASTags based on RFID technology. In order to save fuel, time and pollution and to ensure seamless movement of traffic, it has been decided to enable all lanes in Fee Plazas for electronic toll collection program through FASTags. An NHAI Prepaid Wallet was also launched giving customers the choice of not linking their FASTag to their bank accounts and includes the feature of UPI recharge.
- More than 4.35 crore FASTags have been issued (as on 21 December, 2021). The average daily collection has reached Rs 106 crore (till November 2021) with average daily Electronic Toll Collection (ETC) transactions of 71.38 lakh. FASTag penetration across the country is at around 97 % and many toll plazas are having 99% penetration. As many as 728 National and 201 State Highway Fee Plazas have already been made FASTag enabled. As per estimates, FASTag will save around ₹20,000 crore per year on fuel, that will save precious foreign exchange and help the environment as well.
- Airbag for the person occupying the front seat, other than the driver: The Ministry notified regarding mandatory provision of an airbag for the passenger seated on the front seat of a vehicle, next to the driver.
- International Driving Permit: Ministry has facilitated the issuance of International Driving Permit (IDP) for Indian citizens whose IDP has expired while they are abroad. Now, with this amendment, Indian citizens can apply for renewal through the Indian Embassies / Missions abroad, from where these applications would move to the VAHAN portal in India, to be considered by the respective RTOs.
- Scheme for Compensation of Hit & Run Accident Victims: The Ministry of Road Transport and Highways has notified a new scheme for compensation of victims of Hit & Run motor accidents vide notification dated 25th February, 2022 to cater to enhanced compensation (from Rs 12,500 to Rs 50,000 for grievous hurt and from Rs 25,000 to Rs 2,00,000 for death).
- Honouring good Samaritan: A reward scheme was announced in 2021 for 'Good Samaritan' who has saved life of a victim of a fatal accident.
- In order to facilitate the carriage and movement of Oxygen Cylinders or Oxygen Tanks across the States or within a State and to ensure the smooth supply of oxygen across the country, the Ministry has exempted these from the requirement of Permit under the Motor Vehicles Act 1988. It was later extended till September 2021.

Step towards green transport

1. Sale and Registration of Electric Vehicles without batteries

The Ministry has issued an advisory to all States and UTs regarding sale and registration of Electric Vehicles without batteries. The Government is striving to create an ecosystem to accelerate the uptake of electric mobility in the country.

2. Standards for Hydrogen Fuel Cell Vehicles

For promotion of alternate fuels and green fuel technology, the Ministry has notified the Standards for Safety Evaluation of vehicles being propelled by Hydrogen Fuel cells through an amendment to

Central Motor Vehicles Rules 1989, which would facilitate the promotion of Hydrogen Fuel Cell based vehicles in the country.

3. Emission Standards Bharat Stage VI (BS-VI) for Quadricycle

The Ministry has notified emission Standard Bharat Stage VI (BS-VI) for Quadricycle. BS-VI emission standards, have been mandated w.e.f. 1st April, 2020, provide for strict emission norms.

4. National Vehicle Scrappage Policy

In August 2021, 'National Vehicle Scrappage Policy' has been launched to create an eco-system for phasing out unfit and polluting vehicles in an environmentally friendly and safe manner. The policy intends to create scrapping infrastructure in the form of Automated Testing Stations and Registered Vehicle Scrapping Facilities across the country.

5. Safety roadmap for ethanol and its blends

The Ministry on 25th May 2021 has amended the Central Motor Vehicle Rules 1989 to insert a new rule (115K) incorporating the requirements for motor vehicles of Categories L, M and N running on anhydrous ethanol or blends of ethanol with gasoline.

6. Use of Eco-Friendly Material in Construction of Roads

It has been the endeavour of the Ministry to encourage use of new/alternative materials/ technologies on National Highways. The other alternative materials are being used/proposed to be used in coming years in ongoing projects of National Highways: (i) Zinc Slag (ii) Polymer Modified Bitumen (iii) Natural Rubber (iv) Cement treated base (v) Cement treated sub-base (vi) Gabion Wall (vii) Soil stabilizer (viii) Geocomposite (ix) Ultra high strength concrete (x) Ground Granulated Blast Furnace Slag used with Cement (xi) Slope stabilization using geogrid (xii) Fibre in PQC (xiii) Silica-fume (xiv) Dolacher (a residue of sponge iron) in embankment (xv) Iron ore slag as GSB (xvi) Fibre reinforced concrete (polypropylene) (xvii) Iron Slag sand in concrete & DLC (xviii) Alcofine/ Microsilica (xix) Reclaimed Asphalt pavement and Copper Slag.

Rail Infrastructure

Followed by Roads and National Highways, there exist a most preferred mode of transport in India and that is none other than – the Indian Railways (IR henceforth) ! It is one of the largest integrated railway networks in the world which have spread across 67,956 km making it the largest in Asia and the fourth largest in the world. With an enormous route length of more than 1,26,511 km, operating as many thousands of regular trains over 7,325 stations with an employee strength of nearly 1.1 million, the operations of IR certainly are one of the bigger, more varied and highly complex of any across the world. Owning to the 76,608 passenger coaches, 2,93,077 freight wagons and more than 12,000 locomotives, as the eighth largest employer in the world, IR plays a very critical and significant role in the economic life and operations of India.

Major Initiatives

In 2019, construction of total new line, doubling and gauge line increased from 1014 track kilometre (tkm) in 2018 to 1165 tkm. An increase of 15%. In 2021, it has increased up to 1330.41 km. Level crossings may be manned or unmanned. One or more gatemen are posted at manned level crossings to regulate the traffic. Till 2019, elimination of manned level crossings increased by 199%.

Megha Infra of Indian Railways: World's highest (359m) Railway Bridge over river Chenab

- Udhampur-Srinagar-Baramulla Rail link Project (USBRL): This project having length of 272 km long Railway Line from Udhampur to Baramulla joining the Kashmir valley with rest of the country and has been declared as National Project in 2002. Out of 272 km of USBRL Project, work has been completed on 161 km and commissioned. Project is scheduled to be completed by 2023.
- Rail connectivity covering all North East Capital: The Indian Railways is working on connecting capitals of all North-Eastern states to the rail network by 2023. As of today, except Sikkim, all North-Eastern states are connected to the rail network. Capitals of Assam, Tripura and Arunachal are already connected. Work on capital connectivity of Manipur, Mizoram, Nagaland and Meghalaya is under progress and scheduled to be completed by March 2023.
- Functional Railways: Till December 2021, 1646 Mail/ Express trains out of 1768 (93%), Sub-Urban- 5528 out of 5626 (98%) and Passenger- 1599 out of 3634 (44%) trains are functional and running.

Punctuality of Mail/ Express trains increased to 92.55% during 2021-22 from 74.21% in 2019-20.

- Modernization of Railway Stations: Ministry has formulated various schemes viz. Model, Modern and Adarsh Station Scheme for upgradation/beautification/ modernization of stations on Indian Railways. As on 25th March 2022, 590 stations have been developed as 'Model' stations , 637 stations were developed as 'Modern' stations and 1213 stations so far have been developed as 'Adarsh' stations .

Projects completed or under progress:

- 320 km long Gauge Conversion Project from Jaipur-Ringas-Sikar-Churu completed.
- 113 km long new line Port connectivity project in Andhra Pradesh connecting main land with Krishnapatnam port.
- 55.47 Km long Doubling work in UP from Meerut-Muzaffarnagar.
- 42.5 Km long New Line Coal Project from Kharsia-Korichhapar.
- New Line stretching to 67 km from Rajgir-Hisua-Tilaiya including Islampur-Natesar.
- Doubling of Line stretching to 42 km from Hajipur-Ramdayalu Nagar.
- 19 Km long coal project named Bakhtiarpur-Barh completed and commissioned for coal movement to Barh NTPC Thermal Power Plant.

- 45 Km long length doubling project from Lumding to Hojai
- 112 Km long new line National Project construction in Tripura named Agartala–Sabroom :
- 3rd line between Allahabad- Pt. Deen Dayal Upadhyay Junction (UP)
- New Line between Sahjanwa-Dohrighat (UP)
- Doubling of Line from New Bongaigaon-Agthori (Assam)
- New Line between Vaibhavwadi-Kolhapur (Maharashtra)
- 112 km long Agartala – Sabroom rail line in Tripura completed
- 45 km long doubling project from Lumbding to Hojai completed
- Dabhoi – Kevadiya Project completed
- Modern Pamban (Rameshwatam,Tamil Nadu) bridge to be completed by 2022
- Rishikesh – Karnaprayag Rail Link (125 km) by December 2024
- DPR of Char Dham Project and the work is under various stages of implementation

Green Railways for Green Tomorrow

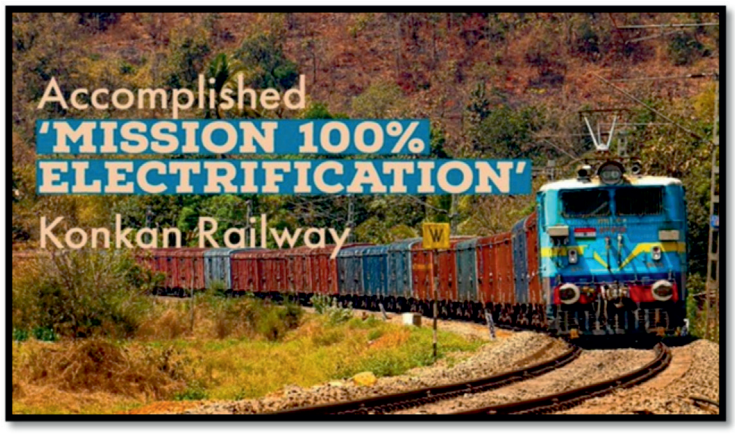
Electrification: Indian Railways (IR) has embarked upon a major electrification program to electrify its Broad Gauge (BG) network on Mission mode. Indian Railways has total Broad Gauge (BG) network of 64,689 route kilometer (RKM) including 740 RKM of Konkan Railway. In 2019, railway electrification were increased from 1440 route kilometre (rkm) to 2041 (rkm) which was 42% increase if compared to previous year.

Out of 45,881 RKM, about 71% has already been electrified till 31.03.2021. During 2020-21, 6,015 RKMs have been electrified against the target of 6,000 RKM.

On a mission mode to electrify its entire Broad Gauge network to provide environment friendly, green & clean mode of transport to its people under the 'Mission 100% Electrification - Moving towards net Zero Carbon Emission' plan, Konkan Railway has accomplished 100% Rail electrification of its entire stretch. The foundation stone for the Electrification of the entire 741 kms route work was laid in November 2015. The total cost of the project is Rs. 1287 crore.

On the other hand, striving towards the same vision of Green Railway by 2030, fast-tracking electrification of its network, South Western Railway has achieved 511.7 route kms of electrification as on 28.03.2022 surpassing the Railway board target of 459 Route kms for the financial year 2021-22. In the previous financial year 2020-21, South Western Railway had completed 476.7 Route kms of electrification of its network.

Further, Northeast Frontier Railway (NFR) has successfully completed electrification work of total 1294 TKM (649RKM) from Katihar (Bihar) to Guwahati (Assam). By this, total HDN (High Density Network) routes (649 RKM) falling in NFR have been commissioned with electric traction. All major passenger trains connecting Guwahati (in Assam) to other metropolitan cities like Delhi, Mumbai and Kolkata are now able to run on electric tractions. The new milestone of NFR will save forex upto Rs. 300 crore per annum spent on High-Speed Diesel (HSD). Time between Katihar to Guwahati is reduced by 2 hr. and additional 10% new trains (passenger and frieghts) can be run on the route giving speedy connectivity to entire North East via Guwahati.



The IR plans full electrification of all broad-gauge routes by December 2023. That number went up to 6,015 RKM in FY 2020-21, an 886% growth. Despite the pandemic, this endevour has not taken a back seat. In the last seven years, IR has electrified 24,080 RKM, which represents 455% of the figure in the previous seven years.

Solar Energy - Indian Railways (IR) has planned for installation of solar energy projects on unused vacant Railway land. State-wise details where action has been taken for installation of Solar electricity projects on unused vacant Railway land are as follows - Chhattisgarh- 50 Mega Watt (MW) at Bhilai, ii) Uttar Pradesh – 3 MW at Modern Coach Factory, Raebareli, iii) Haryana- 2 MW at Diwana (near Panipat), iv) Madhya Pradesh- 1.7 MW at Bina, v) Maharashtra- 15 MW Buttibori (Nagpur). About 114 MW of solar rooftop plants have been installed in over 1000 stations and 400 service buildings. Further, IR is planning to install solar energy projects on its unused land in various States including Gujarat based on techno-economic feasibility.

Wind Energy - Out of 200 MW target of IR, 103.4 MW wind plant have been already been installed. Wind Mill Plant of 21 MW (for non-Traction) capacity in Tamil Nadu, 26 MW (for traction) capacity in Rajasthan, 6 MW (for non-traction) & 50.4 MW (for traction) capacity in Maharashtra has been installed. Further, tenders for 187 MW capacity floated by Railway Energy Management Company Limited (REMCL) as part of Hybrid renewable energy plants.

LEDs across all stations - Reduced energy consumption has also been achieved by the Indian Railways through 100% LED replacement. Today, all 8,000 odd railway stations in the country as well as all 20,000 odd IR buildings and installations use energy efficient LED lighting. From April 2018 to 5th November 2019, 436 trains converted from End of Generation (EoG) to Head on Generation (HoG) to reduce diesel consumption; taking cumulative number to over 500 trains. 16 stations had been declared Green Railway stations across IR, which were meeting energy needs completely either through solar or wind power till the end of 2019.

Dedicated Freight Corridors

The two under construction Dedicated Freight Corridor (DFC) projects - Eastern (EDFC) from Ludhiana to Dankuni (1,875 km) and Western (WDFC) from Dadri to Jawaharlal Nehru Port Trust (1,506 km), will revolutionize logistics. As on April 2022, 1110 km out of 2843 km of DFCs has been completed. These DFCs are also an example of green transportation. The network

is being designed with low carbon friendly technologies and energy efficient components. DFCs are fully electrified and designed for heavier axle load, higher speeds and long-haul trains up to 1.5 km long which can be used as double stack container trains, thereby resulting in higher carrying capacity and faster movement of goods.

Further, the Ministry has also sanctioned for the survey/preparation of Detailed Project Report (DPR) for the Dedicated Freight Corridors viz East-Coast Corridor (Kharagpur to Vijayawada – 1115 km), East-West Corridor (Palghar-Bhusawal-Nagpur-Kharagpur-Dankuni- 2163km and Rajkharsawan-Kalipahari-Andal - 195 km) and North-south Sub-corridor (Vijayawada-Nagpur-Itarsi - 975 km).

Green Toilets

As part of the Swachh Bharat Mission, IR had completed installation of bio toilets on its entire fleet. This ensures no human waste discharge from coaches on track. With this effort nearly 2,74,000 litres per day of excreta on tracks is being avoided. Additionally, human waste led corrosion of rails and fittings costing Rs. 400 crore per annum is also avoided. Integrated mechanized cleaning is now provided at 953 stations.

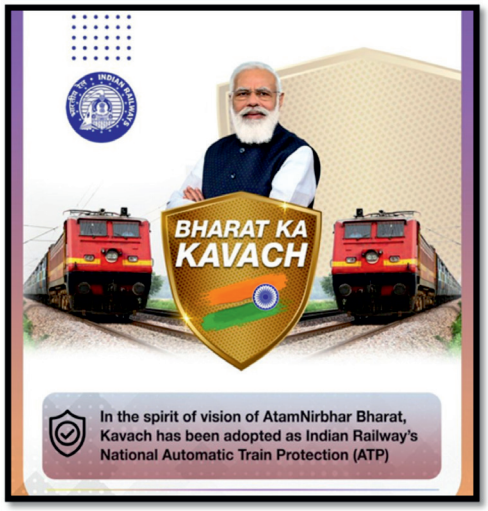
In 2019, On Board Housekeeping Service (OBHS) for cleaning of coach toilets, doorways, aisles and passenger compartments during the run of the trains has increased to 1090 pair of trains. This OBHS service is supported by SMS based on demand "Coach-Mitra" service to cover all these trains.

KAVACH

Successful trial of 'KAVACH'- an indigenously developed automatic train protection (ATP) system that aims to provide protection by preventing trains to pass the signal at Danger (Red) and avoid collision has been conducted in March 2022. As a part of Aatmanirbhar Bharat, 2,000 km of network is to be brought under KAVACH for safety and capacity augmentation in 2022-23. Around 34,000 km of rail network is scheduled to be brought under this technology.

Digital Railway

As on December 2019, the number of POS machines installed on trains for billing and digital payments has increased from 2,742 to 5,122 on 417 trains and 703 rakes. As on March 2022, free high-speed Wi-Fi internet facility has become available at 6100 railway stations of the country. Of these, more than 5,000 stations are in rural areas. The project for providing free Wi-Fi internet facility at stations was conceptualized in the 2015 Railway Budget.



India's Panorama via Indian Railways

Bharat Gaurav- Theme Based Trains

In November 2021, to tap the vast tourism potential of India, Indian Railways have launched a new tourism product i.e., theme based tourist circuit trains 'Bharat Gaurav'. Service providers spread across the length and breadth of the country will be able to showcase untapped yet historically significant rich treasures of the country. Service Providers would be able to refurbish the coaches and have been given full flexibility to decide the themes, tariff, interior designs and other business modalities.

One Station, One Product

'One Station One Product' concept aims to encourage indigenous and specialized products and crafts of India through providing display and sale outlets on railway stations across the country. The products would be specific to that place and could include artefacts made by indigenous tribes, handlooms by local weavers, handicrafts like world famous wood carving, chikankari and zari-zardozi work on clothes, or spices tea, coffee and other processed/semi processed food items/products indigenously grown in the area. A pilot project has been launched with effect from 25th March, 2022 on each Zonal Railway.

Aatmanirbhar Railways for Aatmanirbhar Bharat

Vande Bharat Trains

Vande Bharat Express is the next major leap for Indian Railways in terms of speed and convenience. In his address to the nation on 15 August 2021 from the ramparts of the Red Fort, Prime Minister Narendra Modi announced that during the 75 weeks of the Amrit Mahotsav of Independence, 75 Vande Bharat trains will connect every corner of the country. In 2019, Indian Railways were to manufacture 44 rakes of Vande Bharat Trains. Its production unit Integral Coach Factory (ICF), Chennai had set the process in motion by publishing tender on 22nd December 2019 for supply of electrical equipment and other items for 44 train sets of 16 coaches each. On 15th February 2019, first indigenous semi high speed train i.e. Vande Bharat was flagged off on the New Delhi-Kanpur-Allahabad-Varanasi route.

Speed of freight trains has doubled from a level of 24 kmph one year ago to 46 kmph which has reduced half of the time of transport.

Tejas Trains

The Tejas Express is a semi-high speed fully air-conditioned train introduced by Indian Railways

with modern onboard facilities. First Tejas train was launched on 4th October 2019, on the Lucknow-New Delhi route. Till December 2021, four Rajdhani Express trains are being run with Tejas rakes and they include Agartala to Anand Vihar, Mumbai to New Delhi, Mumbai to Hazrat Nizamuddin and Rajendra Nagar to New Delhi.

Kisan Rails

Kisan Rail trains had been introduced on 7th August 2020 by Indian Railways to move perishables including fruits, vegetables, meat, poultry, fishery and dairy products from production or surplus regions to consumption or deficient regions. Till 25th March 2022, a total of 2,190 trips on more than 153 routes of nearly 1800 Kisan Rail trains have been operated across the country. It carried more than 6 lakh tonnes of agricultural products.

National Rail Plan (NRP) 2030

It has been developed with a view to develop infrastructure by 2030 to cater to the traffic requirements upto 2050. The NRP is aimed to formulate strategies based on both operational capacities and commercial policy initiatives to increase modal share of the Railways in freight to 45%. The objective of the plan is to create capacity ahead of demand, which in turn would also cater to future growth in demand right up to 2050 and also increase the modal share of Railways to 45% in freight traffic and to continue to sustain it.

As part of this plan, 'Vision 2024' has been launched for accelerated implementation of certain critical projects by 2024 such as 100% electrification, multi-tracking of congested routes, upgradation of speed to 160 kmph on Delhi-Howrah and Delhi-Mumbai routes, upgradation of speed to 130kmph on all other Golden Quadrilateral-Golden Diagonal (GQ/GD) routes and elimination of all Level Crossings on all GQ/GD route. Moreover,the work of Delhi-Howrah and Delhi-Mumbai route is scheduled to complete by 2023. 58 Super critical Projects of a total length of 3750 km costing Rs. 39,663 Crore and 68 Critical Projects of a total length of 6913 km costing Rs. 75,736 Crore, have been identified for completion by 2024.

'Helping Hand'- Indian Railways during Covid-19

Shramik Special Trains

Shramik Special Trains were arranged when millions of migrant workers urgently wanted to get back to their homes and villages due to Covid-19 pandemic. The first Shramik Special train was flagged off on 1 May 2020. With maximum trains to Uttar Pradesh (1,726) and Bihar (1,627), Shramik trains carried 63.15 lakh passengers to 23 states through 4621 trips between 1 May and 31 August 2020, in response to the state governments' requests.

78 Oxygen generating plants have been installed and are functional in Railway hospitals

till December 2021. 17 more Oxygen plants have been sanctioned and at different stages of commissioning. 69 Railway hospitals are providing treatment to railway staff affected by Covid-19. In these hospitals the number of beds for Covid treatment has been increased from 2539 to 3948. Total Covid beds have increased to 6972, ICU beds from 273 to 404, invasive ventilators from 62 to 3544, additional 449 non-invasive ventilators and 129 high flow nasal oxygen machines. Also 3420 oxygen cylinders, were supplemented in Railway Hospitals.

Railway has provided Unique Medical Identity Card (UMID) to most of the employees and their family members. Till now 42.09 lakh UMID cards have been generated for Railway Medical Beneficiaries. UMID has also been linked to the National Health Id of the Ministry of Health and Family Welfare. Indian Railways ran Oxygen Express at the shortest possible time and ramping up the delivery. Railway has tried its best to fulfil the demand of the state governments. Till December 2021, more than 899 Oxygen Express Trains have completed their journey and more than 36,840 Tonnes of liquid Oxygen has been delivered to the 15 states. Oxygen Express also delivered oxygen (3911.41 MT) for Bangladesh.

Conversion of 4,176 coaches to serve as quarantine/isolation facilities - Out of 4,176 train coaches to serve as quarantine/isolation facilities for Covid-19 across the country, 324 Coaches have been deployed across States of Delhi, Maharashtra, Gujarat, Madhya Pradesh, Uttar Pradesh, Nagaland, Assam & Tripura as per demand by State Government.

Ports, Shipping and Waterways Infrastructure

India has maritime coastline of 7517 km which is huge ocean of economic opportunities. About 95% of the country's trade by volume and 68% by value is moved through maritime transport. Moreover, crowned by Indian Ocean from beneath which accounts for 80% of global seaborne trade, India's ports and shipping industry is blessed with big maritime market opportunities. The Indian ports and shipping industry plays a vital role in sustained growth of country's trade and commerce. India is the 16th largest maritime country in the world which has 12 major and 205 notified minor and intermediate ports. The capacity of major ports, which was 871.52 million tonnes per annum (MTPA) at the end of March 2014, has increased to 1,560.61 MTPA, a 79% increase.

Sagarmala Projects - Development of Ports

Under Sagarmala Programme, more than 800 projects at an estimated cost of around 5.54 lakh crore have been identified for implementation during 2015 to 2035. 14 projects related to development of new ports with estimated investment of Rs. 1,25,776 crores are part of Sagarmala.

Capacity of major port till 2014 was 800.52 metric tonne per annum (MTPA), now it is 1560.61 MTPA (March 2022). Whereas, the capacity of non-major ports which was 689 MTPA till 2014 is now 1224 MTPA. Moreover, the Ministry is also developing Fishing Harbours, 31 of which has been developed under Sagarmala which are enabling the fishing community to lead a life of dignity and prestige.

The number of seafarers which was 1,17,090 till 2014 has now increased to 2,05,787 (March 2022).

The Union Cabinet has accorded its 'in-principle' approval for setting up a major port at Vadhavan near Dahanu in Maharashtra at an estimated cost of Rs.65,544.54 crore. The Cabinet has approved the project of Deepening and Optimizing of Inner Harbour Facilities of Western Dock at Paradip Port under PPP mode with total estimated cost of Rs. 3004.63 crore.

Jal Marg Vikas Project

Announced in July 2014, for capacity augmentation of navigation on National Waterway-1 (Haldia to Varanasi, 1390 km) is being

Prime Minister had inaugurated multi-model terminal on Ganga in Varanasi (Nov 2018). Total four such terminals are being constructed on river Ganga under Jal Marg Vikas Project. (Source-Firstpost)

implemented at a cost of Rs. 5369.18 crore with the technical assistance and investment support of the World Bank. The Project is expected to be completed by March, 2023. As on November 2021, the project has achieved an overall financial progress of about 42.20% and the physical progress is about 42.99%.

Sagarmala Project – Development of Waterways

The Sagarmala programme is the flagship programme of the Ministry to promote port-led development in the country through harnessing India's long coastline, 14,500 km of potentially navigable waterways and strategic location on key international maritime trade routes. The main vision is to reduce logistics cost for import-export and domestic trade with minimal infrastructure investment.

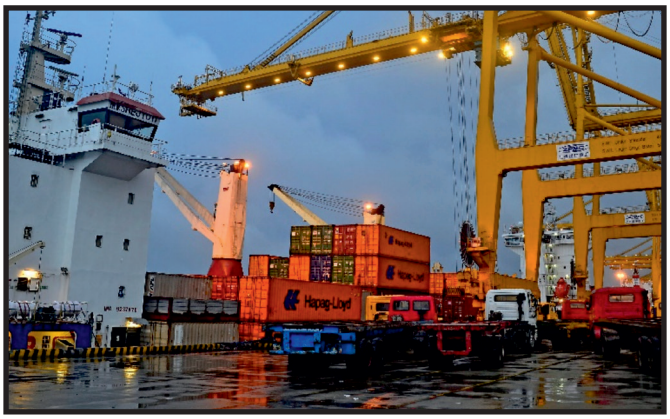
It was approved by the Union Cabinet in March 2015 and a National Perspective Plan was prepared by the Ministry which was released on 14th April 2016. Till March 2022, more than 800 projects at an estimated cost of around Rs. 5.48 lakh crore have been identified for implementation. Special Economic Zone at Jawaharlal Nehru Port, Smart Industrial Port City

Project Pillar/Theme	Total		Completed		Under Implementation	
	#	TPC (Rs. Cr)	#	TPC (Rs. Cr)	#	TPC (Rs. Cr)
Port Modernization & New Port Development	237	250606	82	29575	56	37375
Port Connectivity Enhancement	213	138514	57	20958	71	84140
Port Led Industrialization	33	119845	9	45865	21	72705
Coastal Community Development	77	10135.7	18	1422.9	19	2351
Coastal Shipping & IWT	242	29382	28	1178	51	15953
Total	**802**	**548484**	**194**	**99000**	**218**	**212526**

at Deendayal Port & Paradip Port and Coastal Employment Unit at V.O. Chidambaranar Port area are also the part of Sagarmala Projects related to development of new ports with estimated investment of Rs. 1,25,776 crores are part of Sagarmala. These projects are spread across coastal states/ union territories including Andhra Pradesh, Maharashtra, Gujarat, Karnataka, Andaman & Nicobar Islands and Tamil Nadu. Following is the summary of projects under Sagarmala as on 22nd March 2022.

Kaladan Multimodal Transit Transport Project: The objective of the project is to provide an alternative connectivity to the North East Region from the Kolkata/Haldia port through Sittwe Port-Kaladan River up to Paletwa in Myanmar by waterway and Paletwa to Zorinpui by Road in Mizoram and provide an alternate route between the landlocked North-East and the rest of India.

Access of Chittagong and Mongla Port to India: The use of Chittagong and Mongla Ports of Bangladesh for movement of goods to and from India, Memorandum of Understanding, dated 06.06.2015, Agreement, dated 25.10.2018 and Standard Operating Procedure, dated 05.10.2019 have been finalized and port has opened for India. It provides connectivity to Agartala (Tripura) via Akhura; Dawki (Meghalaya) via Tamabil; Sutarkandi (Assam) via Sheola and Srimantpur (Tripura) via Bibirbazar to Chattogram / Mongla Ports in Bangladesh.



Government is carrying out development of Inland Water Transport (IWT) projects on National Waterway-2 (River Brahmaputra) from Dhubri to Sadiya (891kms) at the cost of Rs.461 crore for a period of 5 years (2020-25). The development of NW-2 enables waterway connectivity of North East region with Kolkata/Haldia ports via Indo-Bangladesh Protocol Route. The development of IWT projects on National Waterway-16 & IBP route at the cost of Rs.145 crore for a period of 5 years (2020-25) is being carried out with fairway maintenance and Least Available Depth (LAD) along with navigation aids.

Major infrastructure work to boost connectivity in North East

To promote movement of passenger, cruise services and cargo transit to North East Region (NER), the alternative connectivity route via Bangladesh's Chattogram and Mongla Ports was first time used to North East Region. Eight routes are also provided under the agreement which would enable access of NER via Bangladesh.

To enhance the access and establish alternative waterway connectivity to the North East through Bangladesh, new initiatives and measures are in progress. On the Indo-Bangladesh Protocol route, dredging has commenced between Ashuganj and Zakiganj (295 km) and Sirajganj and Daikhawa (175 km) in Bangladesh by sharing the cost on 80:20 basis (80% by India & 20% by Bangladesh).

Second Addendum to the Protocol for Inland Water Trade & Transit (PIWT&T) has been signed by India and Bangladesh on 20th May, 2020 adding 5 Ports of Call and 2 extended Ports of Call on each side. Bangladesh has allowed the use of its Mongla & Chattogram Ports for the movement of goods to and from India under MoU and Agreement/SoP signed for the purpose.

8 routes are provided under the Agreement which would enable access of North East Region (NER) via Bangladesh. The routes identified allow entry/exit to Agartala and Srimantpur in Tripura, Dawki in Meghalaya and Sutarkandi in Assam.

Digital Upgradation

- In 2019, upgraded Port Community System (PCS) was introduced for all ports. The system enables seamless data flow between the various stakeholders through common interface.
- To move towards complete paperless regime, E-DO (Electronic Delivery Order) through PCS made mandatory along with e-invoicing and e-payment. The Radio Frequency Identification (RFID) Operation are in effect at Kolkata Dock System (KDS) and Rabindra Setu. The RFID system is providing single window system to the port users for obtaining permit/ passes through cashless transactions.
- Logistics Data Bank Service under Delhi Mumbai Industrial Corridor Development Corporation Ltd. (DMICDC), for enabling track & trace movement of export-import container has been implemented in all the Container handling Major Ports.
- An Enterprise Business System (EBS) is being implemented at 5 Major Ports (Mumbai, Chennai, Deendayal, Paradip, Kolkata (including Haldia) Port with project cost of appx. Rs. 320 crores) to provide a digital port ecosystem.

Vessel Traffic Services and Vessel Traffic Monitoring System

- Development of indigenous software solution for Vessel Traffic Services (VTS) and Vessels Traffic Monitoring Systems (VTMS) launched.
- VTS and VTMS is a software which determines vessel positions, position of other traffic or meteorological hazard warnings and extensive management of traffic within a port or waterway.

Helping hand during Covid-19 pandemic

- Grant compensation /Ex-Gratia of 50 lakhs in the event of loss of life due to COVID-19 to the dependent members/legal heirs of the port employees of Major Ports.
- Major Ports ensured storage space for cargo and accommodation and food for migrant laborers working in their premises.
- Major Ports remitted VRC charges for quarantined vessels
- Ports ensured availability of PPE kits and other necessary medical devices and medicines and sanitization of all work spaces
- Isolation and other medical facilities created at Major Ports
- Various technological/digital induction were expedited during Covid-19 pandemic to maintain smooth functioning without human interference. The Ministry has facilitated more than 1,00,000 crew change on Indian ports and through charter flights. It is the highest number of crew changes in the world. Crew change consists of replacing one of the ship's crew members with another one and involves sign-on the ships and sign-off the ship's procedures. Despite Covid-19 Pandemic, all the Indian Ports were operational and were providing essential services and were responsible for smooth supply chain for India and world.

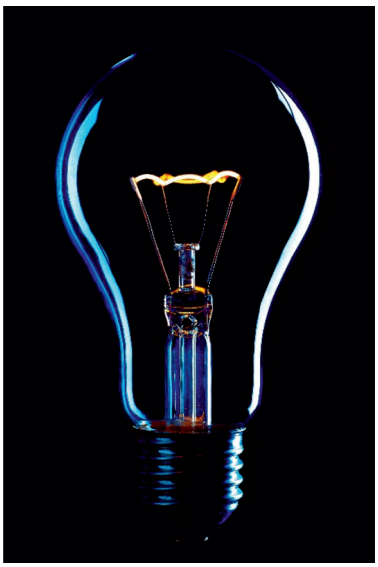
Renewable Energy Infrastructure

Power is among the most critical components of infrastructure, crucial for the economic growth and welfare of nations. The existence and development of adequate power infrastructure is essential for sustained growth of the Indian economy. The Ministry of Power (the Ministry, henceforth) has set ambitious targets for country's power sector. It has aimed to provide 24 by 7 power for all, with 450 GW of installation of renewable capacity by 2030. Many of the government's major initiatives, such as 'Make in India' or 'Aatmanirbhar Bharat' require access to reasonably priced, high-quality power to take off. India's power sector is one of the most diversified in the world. Sources of power generation range from conventional sources such as coal, lignite, natural gas, oil, hydro and nuclear power to viable non-conventional sources such as wind, solar, and agricultural and domestic waste. Whereas, demand for the electricity in the country has increased rapidly and is expected to rise further in the years to come. India has one of the largest and most complex power sectors in the world. Over the past few decades, the country has witnessed a remarkable evolution. As of now, almost every citizen has access to grid electricity, power deficiency has decreased sharply, and the installed renewable energy capacity has reached a fourth of the total capacity. As on 2020, India ranked fourth in wind power, fifth in solar power and fourth in renewable power installed capacity. India is the only country among the G20 nations that is on track to achieve the targets under the Paris Agreement. On this context, it is imperative to understand that prospects of the Ministry of Power through its policies and various initiatives.

Major Initiatives

Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA)

It was launched by the Government of India in September 2017 with an aim to provide energy access to all by last mile connectivity and electricity connections to all remaining un-electrified households in rural as well as urban areas to achieve universal household electrification in the country. Seven States namely Assam, Chhattisgarh, Jharkhand, Karnataka, Manipur, Rajasthan and Uttar Pradesh had reported that around 19.09 lakh un-electrified households, identified before 31.03.2019, which were unwilling earlier but have expressed willingness to get electricity connection. All these seven States have reported 100% household's electrification as on 31.03.2021 As of April 2022, total of 2,81,69,724 households have been electrified under this scheme.



Deendayal Upadhyay Gram Jyoti Yojana (DDUGJY)

In order to provide electrification to all villages, feeder separation to ensure sufficient power to farmers and regular supply to other consumers and to improve Sub-transmission and distribution network to improve the quality and reliability of the supply, Deendayal Upadhyay Gram Jyoti Yojana

(DDUGJY) was launched in July 2015. The scheme has a total outlay of Rs. 76,000 crores. 11.84 lakh households have been sanctioned under DDUGJY against which, 4.34 lakh households have been electrified under the scheme. The Details of electricity infrastructure created under DDUGJY (including additional infra) in the country, are as below (As on 31.10.2020):

Integrated Power Development Scheme (IPDS)

It was launched in the year 2014 with an outlay of Rs. 32,612 crore for improving and augmenting the distribution and sub-transmission systems in urban areas with a view to improve reliability. As of February 2022, projects worth Rs.30,802 crore have been sanctioned under IPDS covering

Sl. No.	Items	Units	DDUGJY	DDUGJY ADDITIONAL INFRA	Total (DDUGJY/ Additional Infra
1	Sub-stations (including augmentation)	Nos.	3,980	227	4,207
2	Distribution Transformers	Nos.	3,91,024	2,17,816	6,08,840
3	Feeder Segregation	CKMs	1,22,123	0	1,22,123
4	11 kV lines	CKMs	1,15,996	66,272	1,82,268
5	LT lines	CKMs	2,88,339	1,93,606	4,81,945
6	33 kV & 66 kV lines	CKMs	22,669	20	22,689
7	Consumer Energy Meters	Nos.	1,51,97,187	-	1,51,97,187
8	Distribution Transformers Meters	Nos.	2,59,472	-	2,59,472
9	11 kV Feeder Meters	Nos.	13,502	-	13,502

project components outlined, of which Union government grant of Rs.16,717 crore has been released to States/UTs. System strengthening and distribution (ST&D) projects covering 547 Circles in 33 States/UTs were taken up. Out of these, the distribution system strengthening works in 544 circles have been successfully completed.

Smart Meters under Smart Meter National Programme

Items (Unit)	Target	Achievement
New Power Sub Station (Nos.)	999	979
HT Lines (cKm)	24,262	23,304
LT Lines (cKm)	10,769	10,378
AB Cable (cKm)	65,029	62,218
UG Cable (cKm)	21,551	20,086
Roof Top Solar Panels (kWp)	46,544	45,641

Smart meters are being installed under various schemes of Government of India as well as by the State Utilities themselves. Government of India is providing funding to the States for implementation of smart metering under National Smart Grid Mission (NSGM) and Integrated Power Development Scheme (IPDS). Till February 2022, 37.33 lakh smart meters have been installed in various States under the aforesaid schemes of the Ministry and DisComs.

Further, the Ministry has launched "Revamped Distribution Sector Scheme (RDSS) on 20th July, 2021 under which deployment of 25 crores smart prepaid meters for all domestic consumers have been envisaged till March, 2025.

Power Supply Position Since 2007-08

Year	Energy Requirement / Availability				Peak Demand / Peak Met			
	Energy Requirement	Energy Availability	Surplus (+) / Deficit (-)		Peak Demand	Peak Met	Surplus (+) / Deficit (-)	
	MU	MU	MU	%	MW	MW	MW	%
2007-08	7,39,343	6,66,007	-73,336	-9.9	1,08,866	90,793	-18,073	-16.6
2008-09	7,77,039	6,91,038	-86,001	-11.1	1,09,809	96,785	-13,024	-11.9
2009-10	8,30,593	7,46,644	-83,949	-10.1	1,19,166	1,04,009	-15,157	-12.7
2010-11	8,61,591	7,88,355	-73,236	-8.5	1,22,287	1,10,256	-12,031	-9.8
2011-12	9,37,199	8,57,886	-79,313	-8.5	1,30,006	1,16,191	-13,815	-10.6
2012-13	9,95,557	9,08,652	-86,905	-8.7	1,35,453	1,23,294	-12,159	-9.0
2013-14	10,02,257	9,59,829	-42,428	-4.2	1,35,918	1,29,815	-6,103	-4.5
2014-15	10,68,923	10,30,785	-38,138	-3.6	1,48,166	1,41,160	-7,006	-4.7
2015-16	11,14,408	10,90,850	-23,558	-2.1	1,53,366	1,48,463	-4,903	-3.2
2016-17	11,42,928	11,35,332	-7,596	-0.7	1,59,542	1,56,934	-2,608	-1.6
2017-18	12,13,326	12,04,697	-8,629	-0.7	1,64,066	1,60,752	-3,314	-2.0
2018-19	12,74,595	12,67,526	-7,070	-0.6	1,77,022	1,75,528	-1,494	-0.8
2019-20	12,91,010	12,84,444	-6,566	-0.5	1,83,804	1,82,533	-1,271	-0.7
2020-21	12,75,534	12,70,663	-4,871	-0.4	1,90,198	1,89,395	-802	-0.4
2021-22 (Upto Oct.)	824348	820706	-3,642	-0.4%	2,03,014	2,00,539	-2,475	-1.2

Revamped Distribution Sector Scheme

To improve the operational efficiencies and financial sustainability of all DISCOMs/ Power Departments excluding Private Sector DISCOMs by providing conditional financial assistance to DISCOMs for strengthening of supply infrastructure, Union Cabinet chaired by the Prime Minister Shri Narendra Modi had approved a reforms-based and results-linked 'Revamped Distribution Sector Scheme' in June 2021. The scheme aims to reduce the Aggregate Technical & Commercial (AT&C) losses to pan-India levels of 12-15% and Average Cost of Supply and the Average Revenue Realized (ACS-ARR) gap to zero by 2024-25. The scheme has an outlay of Rs.3,03,758 crore and an estimated GBS of Rs.97,631 crore from the Union Government.

Ujwal DISCOM Assurance Yojana (UDAY)

The Ujwal DISCOM Assurance Yojana (UDAY) was launched by the Ministry in November 2015 for operational and financial turnaround of State-owned Power Distribution Companies (DISCOMs). The targeted outcome parameter and achievement as reported by State Power Distribution Utilities is as below:

Parameters	Targets	Achievements
Aggregate Technical & Commercial (AT&C) Losses	15%	Reduction in AT&C losses from 23.70% in FY 16-17 to 20.93% in FY 20-21
Average Cost of Supply (ACS) - Average Revenue Realised (ARR) gap	Zero by March 2019	Reduction of ACS - ARR gap from Re.0.48 per kWh in FY 16-21 to Re.0.30 per kWh in FY 20-21

'North Eastern Region Power System Improvement Project (NERPSIP) for Six States

It was launched in December 2014 to strengthen Intra-State Transmission and Distribution Systems (33kV and above) in North East. With 68% of physical progress and 63.70% (approved cost) financial progress, against sanctioned 444 transmission elements, 312 elements have been completed upto October, 2021. Cumulatively, Ministry of Power has released Rs.3361.33 crore under the Scheme upto October, 2021.

Comprehensive Scheme for Strengthening of Transmission & Distribution Systems in Arunachal Pradesh and Sikkim

It was approved by Government of India in October 2014 at an estimated cost of Rs. 4754.42 crore. With 44% of the physical progress and 59.60% financial progress, out of 292 sanctioned

elements), 64 elements have been completed upto October, 2021. Cumulatively, the Ministry has released Rs. 964.24 crore upto October, 2021.

Unnat Jyoti by Affordable LEDs for All (UJALA)

Launched in 2015, Unnat Unnat Jyoti by Affordable LEDs for All (UJALA) aimed at providing LED bulbs to domestic consumers for replacement of incandescent bulbs with LED bulbs at an affordable price. EESL's Unnat Jyoti by Affordable LEDs for All (UJALA) is the world's largest lighting replacement programme.

As on date, over 36.79 crore LED bulbs, 71 lakh LED Tube lights and 23 lakh energy efficient fans have been distributed by EESL across India. This has resulted in estimated energy savings of 47,785 mn kWh per year with avoided peak demand of 9,567 MW and GHG emission reduction of 39 million t CO2 per year.

Street Lighting National Programme (SLNP)

Hon'ble Prime Minister launched SLNP programme on 5th January, 2015 to replace conventional street lights with smart and energy efficient LED street lights. Over 1.2 crore LED Street lights have been installed by EESL across India. This has resulted in estimated energy savings of 8.24 billion kWh per year with avoided peak demand of 1,374 MW and estimated GHG emission reduction of 5.68 million t CO2 per year.

View of 400 kV Kishenpur-Wagoora (Jammu) Transmission Line

GRAM UJALA

Gram Ujala program launched on 19th March, 2021 wherein old type of bulbs are replaced by efficient LED bulbs that consumes 88% less electricity. As of May 2022, over 1crore LED bulbs have been distributed under this program. This has resulted in estimated energy saving of 467 million kWh per annum.

Gram Ujala has been augmenting government's endeavour to remove carbon footprints.

Renewable Energy Management Centre (REMC)

Ministry of Power had approved Establishment of 11 Renewable Energy Management Centre (REMCs) in 2017 in Renewable Energy rich States. Further, the Ministry on 16.12.2019 also

approved establishment of one REMC at Telangana and one Energy Management Centre (EMC) at South Andaman. The EMC at South Andaman has been commissioned in July, 2021. REMC at Telangana is targeted for commissioning by December, 2021.

World's Highest Voltage 1200 kV UHVAC Station at Bina, Madhya Pradesh.

Atal Jyoti Yojana (AJAY) and Solar Study Lamp scheme

Over 1.48 lakh Solar LED Street Lights commissioned in rural areas under AJAY and over 59.18 lakh Solar Study Lamps distributed to school going students under Solar Study Lamp scheme till December 2019.

Liquidity infusion scheme for Power Sector under Atma Nirbhar Bharat

As a part of Atma Nirbhar Bharat Abhiyan, Union Finance Minister had announced on 13th May, 2020 to infuse liquidity of Rs.90000 crore in the power sector through Power Finance Corporation (PFC) and Rural Electrification Corporation Ltd. (REC) to enable the sector to maintain power supplies and keep the lights on, as cash flows had plummeted during lockdown imposed to contain the spread of Covid-19.

Under this intervention, REC and PFC have been extending special long term transition loans upto 10 years to Power Distribution Companies (DISCOMs) for liquidating outstanding dues of Central Public Sector Undertaking (CPSU) Generation (Genco) & Transmission Companies (Transcos), Independent Power Producers (IPPs) and Renewable Energy (RE) generators as existing on 30.06.2020. Rs.118508 crore worth of loans have been sanctioned under this scheme.

Hydro Power Project

State-wise List of Hydro Electric Projects (above 25 MW) under construction

S. No.	Name of Scheme	State	Capacity (MW)
1	Polavaram	Andhra Pradesh	960
2	Subansiri Lower	Arunachal Pradesh	2000
3	Lower Kopli	Assam	120
4	Parbati St. II	Himachal Pradesh	800
5	Luhri-I	Himachal Pradesh	210
6	Dhaulasidh	Himachal Pradesh	66
7	Uhl-III	Himachal Pradesh	100
8	ShongtongKarcham	Himachal Pradesh	450
9	BajoliHoli	Himachal Pradesh	180
10	Sorang	Himachal Pradesh	100
11	Tidong-I	Himachal Pradesh	100
12	Kutehr	Himachal Pradesh	240
13	TangnuRomai	Himachal Pradesh	44

14	PakalDul	J&K	1000
15	Parnai	J&K	37.50
16	Kiru	J&K	624
17	Lower Kalnai	J&K	48
18	Ratle	J&K	850
19	Pallivasal	Kerala	60
20	Thottiyar	Kerala	40
21	Maheshwar	Madhya Pradesh	400
22	Koyna Left Bank	Maharashtra	80
23	Shahpurkandi	Punjab	206
24	Teesta -VI	Sikkim	500
25	Rangit-IV	Sikkim	120
26	Bhasmey	Sikkim	51
27	Rangit-II	Sikkim	66
28	Panan	Sikkim	300
29	Kundah Pumped Storage	Tamil Nadu	500
30	VishnugadPipalkoti	Uttarakhand	444
31	Naitwar Mori	Uttarakhand	60
32	TapovanVishnugad	Uttarakhand	520
33	Vyasi	Uttarakhand	120
34	Tehri PSS	Uttarakhand	1000
35	LataTapovan	Uttarakhand	171
36	PhataByung	Uttarakhand	76
37	Rammam-III	West Bengal	120
	Total		**12763.50**

Source: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1776185

The Government has cleared 8 hydro-electric projects in Indus basin, out of which seven projects are in UT of Ladakh and one in UT of J&K. Moreover, Joint Electricity Regulatory Commission (JERC) for Union Territory of Jammu and Kashmir and Union Territory of Ladakh has been constituted.

S. No.	Name	Location	Capacity (MW)	Estimated Cost (Rs. crore)	Estimated time of Completion (Month)
1	DurbakShyok	Ladakh	19	272.03	30
2	Sankoo	Ladakh	18.50	260.41	30
3	Nimmu Chilling	Ladakh	24	522.53	54
4	Rongdo	Ladhak	12	123.70	48
5	Mangdum Sangra	Ladhak	19	254.16	30
6	Kargil Hunderman	Ladhak	25	489.30	36

7	Tamasha	Ladhak	12	147.89	48
8	Ratan Nag	J & K	10	315.73	48

Source: https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1776185

Power on 'Digital mode' – Augmentation of digital technology

Power Rail Koyla Availability through Supply Harmony (PRAKASH Portal)

Launched in October 2019 with an aim at bringing better coordination for coal supplies among all stakeholders viz - Ministry of Power, Ministry of Coal, Coal India, Railways and power utilities. This is an important step in ensuring adequate availability and optimum utilization of coal at thermal power plants.

Moving towards 'Green Power'

- In order to promote the capacity addition of Solar and Wind Power Projects, the waiver available for use of Inter State Transmission System (ISTS transmission charges and losses) has been extended for use of Inter State Transmission System (ISTS) for transmission of electricity by Solar or Wind power projects commissioned till December 2022. The waiver shall be applicable for the twenty-five years from the commissioning of such projects.
- In order to promote generation from renewable sources of energy, Ministry has issued an order on 5th August 2020 for extension of waiver of Inter State Transmission System (ISTS) charges and losses for transmission of the electricity generated from solar and wind projects commissioned till 30th June 2023.
- With the aim of promoting RE power and to provide Round-The-Clock (RTC) power to the DISCOMs from renewable energy sources, Ministry of Power has issued RTC power Guidelines on 22.07.2020. Now the complemented power may be used from any fuel sources.
- Two new products in Power Exchange were launched - Real Time Market (RTM) and Green Term Ahead Market (GTAM). RTM was launched from 01.06.2020 enabling DisComs and other buyers to procure power nearer to delivery time. GTAM was launched from 21.08.2020 enabling procurement of renewable power from the Power Exchanges. The introduction of Green Markets on the Power Exchanges will facilitate achievement of green energy targets in a most efficient and cost optimized manner.
- The Indian renewable energy sector is the fourth most attractive renewable energy market in the world. India was ranked fourth in wind power, fifth in solar power and fourth in renewable power installed capacity, as of 2020. Installed renewable power generation capacity has gained pace over the past few years. With the increased support of Government and improved economics, the sector has become attractive from an investors perspective. As India looks to meet its energy demand on its own, which is expected to reach 15,820 TWh by 2040, renewable energy is set to play an important role. The government plans to establish renewable energy capacity of 523 GW (including 73 GW from Hydro) by 2030.

A Performance Linked Incentive (PLI)

PLI scheme has been approved for encouraging the production of high-efficiency solar modules. In order to protect domestic manufacturers from cheap imports, a Safeguard Duty has been imposed on the import of solar cells and modules. To hand-hold and facilitate investors for setting up manufacturing plants in India, a Project Development Cell (PDC) has been set up in the Ministry.

Waste to Energy program

As on 31st Jan 2021, a total of 5 projects with a cumulative capacity of 74.7 MW power from Municipal Solid Waste (MSW) has been given in-principal approval by the Ministry for grant of Central Financial Assistance (CFA). These projects are estimated to utilize around 6000 Tons/day of MSW for the generation of electricity. Also, to provide long-term visibility to investors, the Government has announced an advanced trajectory of Basic Customs Duty (BCD) on solar cells & modules with the increase in BCD rates on solar inverters and solar lanterns/lamps.

The floating Solar PV Plant at NTPC, Simhandri, commissioned by BHEL

Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM KUSUM)

PM-KUSUM scheme is one of the largest initiatives in the world to provide clean energy to more than 3.5 million farmers by solarising their agriculture pumps.

Roof Top Solar (RTS) Programme

Under the rooftop solar scheme, Central Financial Assistance (CFA) of 40% for RTS systems up to 3 kW capacity and 20% for capacity beyond 3 kW and up to 10 kW is provided. For Group Housing Societies (GHS) and Residents Welfare Associations (RWA), CFA is limited to 20% for RTS plants for supply of power to common facilities. So far over 3.7 GW capacity of RTS capacity has been estimated to have been installed in the country and over 2.6 GW capacity is under installation in the residential segment.

Solar Parks

Under this program, solar project developers set up projects in a plug-and-play model. The scheme for the development of solar parks has a target capacity of 40 GW. All States and Union Territories are eligible for getting benefits under the scheme. Solar parks are being developed by agencies of Central/State Governments, joint ventures between agencies of Union and State Governments, and also by private entities.

ANALYSIS

A country's infrastructure has a direct impact on its economic and social development. Appropriate infrastructure in the form of roads and railways, ports, power, and airports, as well as their efficient operation, was always required for the Indian economy to integrate with other economies around the world, as many developed countries have made significant progress due to massive expansion of economic and social infrastructures. Many projects were stymied by the UPA government's conflicts regarding rapid industrialisation versus traditional agrarian ecosystem. Many infrastructure projects have been halted, abandoned, or have fallen victim to scams.

The NDA government, on the other hand, has always seen infrastructure as the backbone of industrial and agricultural output, as well as foreign and domestic trade. The two most significant impediments to infrastructure development were environmental clearances and land acquisition, hence the government has begun spending more time to land acquisition, with environmental clearances becoming even faster. Furthermore, the government has effectively resolved banks' bad loans, freeing up capital for infrastructure funding, which has proven to be a crucial driver of rapid infrastructure development. In one of the first step towards making a world class infrastructure, PM Narendra Modi launched the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in June 2015 to improve the quality of life in urban areas by providing basic municipal facilities, with a particular focus on the poor and disadvantaged, which marked as one of the most important steps towards infrastructure development. While AMRUT 2.0 initiative was launched on October 1, 2021, for a five-year term spanning the financial years 2021-22 to 2025-26, aiming to offer universal water delivery through functioning taps to all houses in all statutory towns across the country, as well as sewerage/septage management coverage in the 500 cities that were covered in the first phase of the AMRUT plan, with an outlay of Rs. 2,99,000 crores.

The Government of India, led by Shri Narendra Modi, set a Guinness World Record by constructing a 2.5 km 4-lane concrete road in 24 hours, as well as a 1-lane 25-km bitumen Solapur-Bijapur Road in 24 hours, and the most remarkable achievement was the pace of highway construction in the country that reached a new high of 37 km per day in the financial year 2020-21. Rural roads are being built and upgraded across the country, putting previously unnoticed settlements on the map. The road infrastructure has helped families earn more money, opened up new prospects for employment, and made it simpler for inhabitants to go to markets, hospitals, and schools, as well as a range of entertainment options. Rural roads have enabled school buses to reach far-flung communities in the country's low-literacy zones, making it simpler for children to travel to school. Every youngster is now in school, and many of the young people are seeking further education in adjacent towns. Healthcare has become more accessible. Previously, the people suffering from illness had to be taken to the nearest health institution on homemade beds, carts or had to pay hefty price for transportation over rutted dirt roads. But now, in an emergency, ambulances may drive straight up to village houses and transport people during medical emergencies. Even in the remote north-eastern states, the hilly terrain combined with nearly six months of heavy rain made life difficult for the

people, particularly for rural people. However, as new roads are built, farmers can now transport their produce to nearby cities, enhancing their livelihood opportunities. The testament of efforts taken by Government of India can be well derived from the fact that Delhi-Mumbai Expressway, which is part of the Bharatmala Pariyojana, would cut travel time between Delhi and Mumbai to 12-13 hours. The infrastructure development not only clipped down the logistical cost, travel time, connected business hubs but also strengthened the national security. It was a watershed moment when an Indian Air Force aircraft, with two ministers onboard, conducted a mock emergency landing on the national highway, thereby displaying India's national security's might. That was the first time that a national highway (NH-925) was used for emergency landing of IAF aircraft. Apart from the Emergency Landing Strip, three helipads (each measuring 100 x 30 metres) have been built in Kundanpura, Singhania, and Bakhasar villages as part of this project, which will serve as the foundation for strengthening the Indian Army and security network on the country's western international border.

In order to further boost the infrastructural might, PM Gati Shakti - National Master Plan for Multi-modal Connectivity, a digital platform that brings together 16 ministries, including Railways and Roadways, for integrated planning and coordinated implementation of infrastructure connectivity projects, was unveiled by Prime Minister Narendra Modi. People, commodities, and services will be able to flow seamlessly from one mode of transportation to another though multi-modal connectivity. It will improve infrastructure connection at the final mile and minimise people's commuting time.

Under the Union Budget 2022-23, the Government of India has allocated Rs.199,107.71 crore (US$ 26.04 billion) to the Ministry of Road Transport and Highways. In the Union Budget 2022-23, government has planned for an increase in allocation for the central road fund by 19%. The Government further aimed to boost corporate investment in roads and shipping sector, along with introducing business-friendly strategies, which will balance profitability with effective project execution. NHAI has planned to construct 25,000 km of national highways in 2022-23 at a pace of 50 km per day. In October 2021, the government announced a plan to install charging stations every 40 to 60 kilometers on national highways to strengthen wayside amenities; and in line with this, ~700 e-vehicle charging stations are expected to be installed by 2023, covering 35,000 to 40,000 kms of national highways. The Government, through a series of initiatives, is working on policies to attract significant investor interest. A total of 200,000 km of national highways is expected to be completed by 2022.

The BJP-led administration understood that infrastructure development is directly proportional to the country's progress, thus it used every resource at its disposal to address the issue, one of the key resources being the Indian Railways. It is through the visionary roadmap under the able leadership of Shri Narendra Modi that potential circuits for movement of vegetables, fruits and other perishables were identified, and on the basis of demands, rakes are provided on priority for running of Kisan Rail services. The government gave special attention on freight trains that move three times quicker while carrying bigger loads, all thanks to the electrified railway line emphasized by the government. The faster, cheaper, and more dependable circulation of products helped to lower India's exorbitant logistics costs and bring the country closer together as a single market. Moreover, this ground-breaking effort to transform the Indian Railways converted

India's largest transport sector, putting the country on a greener economic path. It has the ability to propel India to the forefront of rail freight operations, giving its manufacturers and producers a competitive advantage. The Indian Railway launched the National Rail Plan, Vision 2024, to accelerate implementation of critical projects, such as multitrack congested routes, achieve 100% electrification, upgrade the speed to 160 kmph on Delhi-Howrah and Delhi-Mumbai routes, upgrade the speed to 130 kmph on all other golden quadrilateral-golden diagonal (GQ/GD) routes and eliminate all level crossings on the GQ/GD route, by 2024.

One of the safest medium of transport, the air transport, was revamped during the reign of NDA-II government, the advent of which could be derived from the Ude Desh Ka Aam Nagrik (UDAN) scheme. It was the vision of Prime Minister Shri Narendra Modi to make flights affordable to everyone, which was realised through the scheme. Financial incentives were provided to airlines under the UDAN plan in order to stimulate operations from unserved and underserved airports while keeping prices cheaper and affordable. Selected Airline Operators (SAOs) have operationalized 409 RCS flights under the innovative UDAN scheme, while only 65 airports were operational till 2014 after independence. But now, India has emerged as one of the fastest growing industries in the country during the last three years. India has become the third largest domestic aviation market in the world and is expected to overtake United Kingdome to become the third largest air passenger market by 2024 , while India's aviation industry is expected to witness Rs. 35,000 crore (US$ 4.99 billion) investment in the next four years. The Government of India is planning to invest US$ 1.83 billion for development of airport infrastructure along with aviation navigation services by 2026.

One of the key areas of transportation that remained unharnessed over the years have been the ports of the country. Though it had immense potential to propel the growth and developmental measures, due focus was not paid to the same. The BJP-led government knew that India's ports and shipping sector are vital to the country's trade and commerce development, and made the automated path available to 100% FDI for port and harbour construction and maintenance projects. It has also made a 10-year tax break more accessible to enterprises who build, manage, and operate ports, thus strengthening the port infrastructure even further. Providers of services such as operation and maintenance (O&M), pilotage and harbouring and marine assets such as barges and dredgers are benefiting from these investments. Domestic waterways have found to be a cost-effective and environmentally sustainable mode of freight transportation, and hence, the government aims to operationalize 23 waterways by 2030. As part of the Sagarmala project, more than 574 projects worth Rs. 6 lakh crore (US$ 82 billion) have been planned for implementation between 2015 and 2035.

Power is among the most critical components of infrastructure, crucial for the economic growth and welfare of nations. The existence and development of adequate power infrastructure is essential for sustained growth of the Indian economy. India's power sector is one of the most diversified in the world. Sources of power generation range from conventional sources such as coal, lignite, natural gas, oil, hydro and nuclear power to viable non-conventional sources such as wind, solar, and agricultural and domestic waste. Electricity demand in the country has increased rapidly and is expected to rise further in the years to come. It is the resolve of the Government of India that it ranked fourth in

wind power, fifth in solar power and fourth in renewable power installed capacity, as of 2020. India is the only country among the G20 nations that is on track to achieve the targets under the Paris Agreement. Emerging as the world leader in renewable energy, the relentless endeavours of Union government has left the marks in its trajectory. India's Nationally Determined Contributions (NDC) under the Paris Agreement for the Period 2021- 2030 aims at reducing the emissions intensity of its GDP by 33% to 35 % by 2030 from the 2005 level and to achieve about 40 % cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030 with the help of the transfer of technology and low-cost international finance. India has achieved a cumulative installed renewable energy capacity (excluding large hydro) of 92.54 GW out of which 5.47 GW was added in the period April 2020 to January 2021. During the period from April 2014 to January 2021, the installed RE capacity of India has increased by 2.5 times, and in the same period, the installed solar energy capacity has increased 15 times. Globally, India stands 4th in renewable energy power capacity, all thanks to the relentless efforts of the Government of India, with 4th in Wind power, and 5th in Solar Power capacity. India is the only country among the G20 nations that is on track to achieve the targets under the Paris Agreement. As of January 2022, India's installed renewable energy capacity stood at 152.36 GW, representing 38.56% of the overall installed power capacity. Solar energy is estimated to contribute 50.30 GW, followed by 40.1 GW from wind power, 10.17 GW from biomass and 46.51 GW from hydropower. The renewable energy capacity addition stood at 8.2 GW for the first eight months of FY22 against 3.4 GW for the first eight months of FY21. The Union Government of India is preparing a 'rent a roof' policy for supporting its target of generating 40 gigawatts (GW) of power through solar rooftop projects by 2022.

India has been witnessing consecutive developmental tides under the successful leadership of Prime Minister Shri Narendra Modi. It is because of the relentless work of the Union government, India's infrastructure growth touching the high skies with the vision to make India – Aatmanirbhar Bharat in true sense.

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'Modern' station scheme was in vogue from 2006-07 to 2007-08.

Presently, Railway stations are upgraded/modernized under 'Adarsh' Station Scheme based on identified need of providing better enhanced passenger amenities at stations.

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