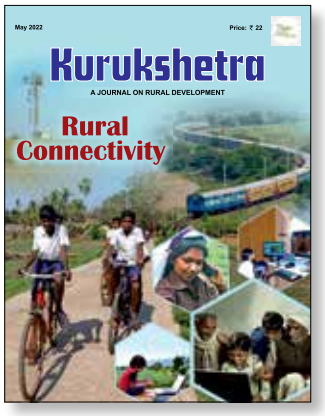

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EDITOR
Shiela Chaudhary
Pankhuri Awasthi

JOINT DIRECTOR (PRODUCTION)
D.K.C. Hrudhainath

COVER DESIGN
Rajender Kumar

EDITORIAL OFFICE
Room No. 653,
Publications Division,
Soochna Bhawan, C.G.O. Complex,
Lodhi Road, New Delhi-110003
Phone : 011-24362859
Email : kurukshetrajournal@gmail.com

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Publications Division, Room No. 779,
Soochna Bhawan, C.G.O. Complex,
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Editorial

India is traditionally an agrarian economy. Nearly, 69 percent of its population still resides in the villages. The penetration level of the new technologies and ICT platforms is continuously increasing in rural areas, thus enhancing the rural connectivity. Access to digital as well as physical infrastructure like roads, railways, airports, hospitals, etc. can be transformative, helping citizens to improve their livelihoods and enabling businesses to flourish. The government is taking numerous steps to connect the rural areas with the rest of country to achieve the vision of Aatma Nirbhar Bharat. Therefore, the theme of this issue of Kurukshetra is dedicated to *Rural Connectivity*.

A good road infrastructure connects the rural areas with the nearby urban or semi-urban areas and ensures a quick flow of services and goods to meet emerging demands. It ensures a competitive advantage and helps in improving the inventory, storage, supply chain, and operations management. The article titled *PMGSY - Changing Nature of India's Rural Roads* affirms the role of PMGSY to connect rural India as since the inception of the PMGSY scheme, more than 6.80 lakh km of roads have been constructed connecting around 1.6 lakh habitations with an expenditure of 2.69 lakh crore. The pace of construction of rural roads under PMGSY has seen massive growth during the last seven years and emphasis has been given to new technology like green technology.

The article *Transforming Rural Connectivity states* that rural connectivity programme requires a robust service enterprise framework with public and private stakeholders at the very core. There is a need to create a vibrant 4P model i.e. Public-Private-Panchayat Partnerships for inclusive and sustainable rural development through rural connectivity.

Access to healthcare services is critical to good health, yet rural residents face a variety of access barriers. The article *Connecting Rural Health Services* highlights the need and ways to strengthen the rural health services in India as it plays a crucial role directly and indirectly creating the linkages between people in rural and urban areas.

Railways is considered as *'Lifeline of India'* and helps in enhancing people's capabilities, choices and quality of life. The article *Railway Connectivity* throws light upon the fact that 'Railway Infrastructure' is considered as an important contributing factor for regional, social, economic development of a country like India. It helps in the creation of employment, enhances connectivity, improves accessibility, increases production, facilitates trade and commerce and is overall considered as an engine of progress and a great source of national integration.

Like Railways, other physical infrastructures like roads have multiplier effect on economic development of the region and standard of living of people. According to the article *Socio-economic Impacts of National Highways on Rural People,* the impact of National highways on connecting people have been tremendous. Development of Highways have a direct impact in the form of enhancement of spatial connectivity, which increase mobility of people and freight and it reduces the cost of provision as well as the cost of use of road infrastructure.

The article titled *BharatNet: Bringing Broadband to Rural India* emphasises on the need of internet connections to bring the rural areas at par with metropolitan cities.

We wish our readers a happy reading.

PMGSY - Changing Nature of India's Rural Roads

Dr. K. K. Tripathy and Dr. Sneha Kumari

The PMGSY roads are known for their construction quality and durability. To ensure quality in the construction of rural roads, vigorous quality control measures are followed, backed by independent quality checks and measurements. The inbuilt clause of five years of maintenance within the construction contract also helped in the maintenance of the newly created assets. Since all the eligible rural habitations have been connected, it is required now to strengthen and widen its ambit further to include major link routes which connect habitations to agricultural and rural markets, higher secondary schools and hospitals/health centres.

India lives in more than 6.5 lakh villages where 69 percent (89 crore) of her population is rural. The country's 650 plus rural districts have 14.5 crore farmer households. The prime occupations of the rural population are – cultivation, agricultural labour, rural artisanry, retail business/small services, etc. The large size and share of the rural population, their prevalent socio-economic situations and the desired levels of quality of life demands an all-round improvement in the rural infrastructure. Improved infrastructure is the key to achieve the objectives of an equitable and inclusive growth with social justice. The country, during the last seven decades of planning and coordination, has devised and launched a series of strategic approaches to economic growth. The country's economists, planners and policy makers have always visualised a vibrant rural India and advocated persistent improvement and expansion of rural socio-economic infrastructure.

A strong rural road infrastructure ensures economic development through reduced cost of production and logistics, increased productivity, improved economies of scale, enhanced employment and improvement in public and private investments in rural farm and non-farm activities. It has its own systemic linkage effects and it provides better avenues of marketing of

farm and non-farm products and services are facilitated in a rural set up. Infrastructure is also considered as one of the five inherent pillars of the Aatma Nirbhar Bharat in addition to the economy, system, vibrant demography and demand.

Need of Rural Connectivity

Market access and business sustainability are positively correlated with connectivity. The modern-day rural transformation is largely driven by the improvements in the rural-urban transportation and connectivity to markets. The occupations of rural areas will become viable, profitable and acceptable only when there is an all-weather rural connectivity. Improved transportation networks help in connecting markets for smooth and timely transactions of commodities and services. Poor road connectivity not only limits market access of marketable products and services but also reduces competitive advantages. The benefits of enhanced agriculture productivity are often wasted due to lack of proper market linkages.

Figure 1: Need for Rural Connectivity

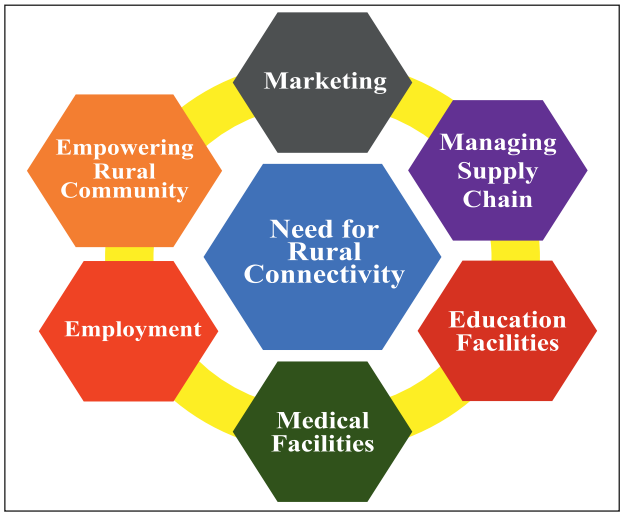


Figure 1 shows the need for rural connectivity. A good road infrastructure connects the rural areas with the nearby urban or semi-urban areas and ensures a quick flow of services and goods to meet emerging demands. It ensures a competitive advantage and helps in improving the inventory, storage, supply chain, and operations management. The competitive advantage is measured in terms of efficient supply of natural resources, significant reduction of harmful elements, creation of diversified and sector-specific jobs, improved standards of community health and education and improved quality of life of people.

Rural Road Growth

The country has the second-largest road network in the world. There is a consistent effort to connect rural communities for ensuring them basic amenities and the necessary markets. The road network has not only helped to place and transport goods and services to the right destination at the right time, but it has also supported sustaining their livelihood. Rural road transportation has gradually increased over the years with the improvement in investments in projects connecting the villages with cities and towns. Table 1 shows that the growth of rural roads have expanded over the years

Table 1 : Growth of Rural Roads

Category	Rural Road Length (Km)	Total Road Length (Km)	Percent Share of Rural Roads to Total
1950-51	2,06,408	3,99,942	51.6
1960-61	1,97,194	5,24,478	37.6
1970-71	3,54,530	9,14,979	38.7
1980-81	6,28,865	14,85,421	42.3
1990-91	12,60,430	23,27,362	54.2
2000-01	19,72,016	33,73,520	58.5
2010-11	27,49,804	46,76,838	58.8
2014-15	33,37,255	54,72,144	61
2015-16	39,35,337	56,03,293	70.2
2016-17	41,66,576	58,97,671	70.6
2017-18 (Provisional)	44,09,582	62,15,797	70.9
2018-19 (Provisional)	45,41,631	63,71,847	71.2

Source: Annual Report 2021-22, Ministry of Road Transport and Highways

Rural roads are constructed through various schemes/ interventions of multiple institutions viz. Panchayati Raj Institutions, (Zila Parishad, Panchayat Samiti, Gram Panchayat), Pradhan Mantri Gram Sadak Yojana (PMGSY) and State Public Works Departments. Roads in the rural sector are the core of rural development. Roads have helped in promoting access to economic and social services, thereby generating increased agricultural productivity, non-agriculture employment as well as non-agricultural productivity, which in turn

expands rural growth opportunities and real income in the hands of the people.

Basic Road Statistics of the Ministry of Road Transport and Highways as presented within the Annual Report 2021-22 provides data about the total road length in the country and the category-wise breakups. The total road length in the country has increased impressively from 3.99 lakh km in 1951 to 63.71 lakh km in 2019 at a compound annual growth rate of 4.2 percent. The percentage of surfaced road length to the total road was 64.65 in 2019. As on 31.03.2019, the total road length in the country was 63,71,847 km out of which rural road length was 45,41,631 km. The share of the rural roads was the highest at 71.27 percent, followed by district roads (9.94 percent), urban roads (8.5 percent), State highways (2.82 percent) and National Highways (2.08 percent) of the total road network in the country.

PMGSY and All-Weather Rural Connectivity

'Rural Roads' is a State subject. The Pradhan Mantri Gram Sadak Yojana (PMGSY), as a part of the poverty reduction strategy of the Government of India, was implemented on 25 December 2000. This was conceived as a one-time special intervention to provide road connectivity by way of a single all-weather road to the eligible unconnected habitations as per core-network with a population size of 500+ in plain areas. For special category States viz. Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, and Uttarakhand and identified areas under the Desert Development Programme, Schedule V tribal areas and selected tribal and backward districts as identified by the Ministry of Home Affairs, the aim is to connect eligible unconnected habitations with a population of 250 persons and above. In respect to most intensive integrated action plan (IAP) blocks as identified by the Ministry of Home Affairs, the unconnected habitations with a population of 100 and above have been included under PMGSY. The scheme allows for the upgradation of the existing roads in those districts where all the eligible habitations of the designated population size have been provided with all-weather road connectivity.

The Government of India has identified a total of 1,78,184 habitations in the population size of 250 plus and 500 plus for coverage under PMGSY. While States have provided connectivity to 16,086 such habitations out of their own resources, 4,722 habitations have either been dropped from the original target list or were not found to be feasible for implementation. So far, 1,57,376 habitations have been covered under PMGSY and the remaining are proposed for completion by September 2022. The status of implementation of PMGSY since inception may be seen in Table 2.

Table 2: Performance of PMGSY since Inception

SN	Indicator	PMGSY I	PMGSY II	PMGSY III	Total
1	Number of Road Works sanctioned	1,64,804	6,700	9,972	1,81,476
2	Road Length Sanctioned (Km)	6,45,599.2	49,884.9	77,128.69	7,72,612.79
3	Number of Bridge works sanctioned	7,520	765	708	8,993
4	Number of Road Works Completed	1,59,473	5,629	1,491	1,66,593
5	Number of Bridge Works Completed	5,724	535	56	6,315
6	Road Length Completed (in Km)	6,11,302.7	46,022.6	23,840	6,81,165.3

Source: 22nd Report of the Standing Committee on Rural Development & Panchayati Raj, Demand for Grants (2022-23), Ministry of Rural Development

Table 2 shows that so far 1.81 lakh number of road works sanctioned under PMGSY out of which 1.66 lakh (91.7 percent) got completed. Out of the total sanctioned road length of 7.72 lakh km, 88.2 percent (6.81 lakh km) have been completed. Similarly, 8,993 bridge works were sanctioned under PMGSY out of which 70.2 percent (6,315) got completed. The Union Cabinet had approved in December 2016 the implementation of a Road Connectivity Project on Left-Wing Extremism Areas (RCPLWEA) as a separate vertical. This initiative envisaged providing connectivity to aspirational districts expediting development in backward areas of the nation.

Table 3: Progress of RCPLWEA

SN	Indicator	
1	Number of Road Works sanctioned	1,030
2	Road Length Sanctioned (Km)	10,231.3
3	Number of Bridge works sanctioned	463
4	Number of Road Works Completed	317
5	Number of Bridge Works Completed	129
6	Road Length Completed (in Km)	4,910.8

Source: 22nd Report of the Standing Committee on Rural Development & Panchayati Raj, Demand For Grants (2022-23), Ministry of Rural Development

Table 3 indicates that so far 1,030 number of road works were sanctioned under RCPLWEA out of which 317 (30.7 percent) got completed. Out of the total sanctioned road length of 10,231 km, 47.9 per cent (4,910 km) have been completed. Similarly, 463 bridge works were sanctioned under RCPLWEA out of which 27.8 percent (129) got completed.

Use of Green Technology

PMGSY promotes the use of new and green technology in the process of rural road construction. Locally available materials are used in road construction activities to promote cost-effective and fast construction. Under PMGSY-III, the States and Union Territories (UTs) are to mandatorily construct roads by using waste plastic within the minimum 15 percent of road length prescribed for new technologies. The basic aim of the use of modern technology in rural road construction is to ensure a safe environment, reduce overall expenditure without compromising on quality, prolonging the life span of roads, and ensure road safety, among others. Some of the techniques and technologies used under PMGSY are as follows.

- Use of cell filled concrete to ensure flexible concrete and crack-free surface.
- Use of paneled cement concrete to guarantee durability.
- Use of roller compacted concrete pavement to enable simple, fast and economical construction with longer service life.
- Use of cement stabilisation to improve soil strength, stability and to reduce. maintenance cost.
- Use of Terrazyme to reduce the construction costs while increasing the overall quality of road structures; it is easy to use, not harmful to the environment or its users and it guarantees a better and longer-lasting road.
- Cold mix technology uses cold mix binders (where heating of bitumen is not required) resulting in saving on fuel and the environment.
- Use of 'Green Technologies' and non-conventional materials like waste plastic, cold mix, geo-textiles, fly-ash, iron copper slag, etc. in rural roads to ensure reuse of wastes.

E-Maintenance Effort

PMGSY's Electronic Maintenance of Rural Roads (eMARG) is an enterprise e-governance solution for road maintenance. Launched with effect from 1 February 2019, this system offers a blue-print on how effectively issues and concerns on maintenance of infrastructure can be resolved across government departments with the use of smart Information Technology and contract management. As a Geographical Information System (GIS)-based enterprise e-Governance solution, eMARG focuses on safe and durable upkeep of PMGSY roads in all types of circumstances and involves performance-based evaluation of roads for provisioning and ensuring appropriate maintenance-related payments.

Issues and Challenges

Rural Connectivity has remained a critical antecedent in the socio-economic development drives of rural people. Connectivity ensures access to amenities viz. education, health, marketing, etc. There had been skewed and less than potential development of the rural road network in the country. Some States provided cent percent connectivity while some others did not have enough financial resources at their disposal and consequently connectivity remained at low levels. There were also problems of inadequate funds for maintenance, upgradation and rehabilitation of existing rural roads. A network approach and provision of sustainable accessibility with assured maintenance were virtually absent. Some of the major constraints and bottlenecks faced in providing rural connectivity are insufficient funds with States

for rural roads, unpredictability of funds for rural roads, inadequate maintenance of rural roads by many States due to limited funds, inadequate maintenance of Major District Roads (MDRs) resulting in pressure on rural roads, quality and specifications not strictly adhered to the standards, layers of informal sub-contracting at the cost of quality, some roads constructed without bridges, etc.

Rural roads are being constructed by Panchayats in the villages with finance commission assistance provided to them through the Finance Commission awards. Various development programmes like Mahatma Gandhi National Rural Employment Act (MGNREGA) and PMGSY encourage rightful investment in road assets in rural areas. It was PMGSY that relied on standardised and strict quality benchmarking, monitoring and maintenance processes and procedures.

This quality-benchmarked rural roads programme with its due emphasis on the superiority of construction has successfully expanded the connectivity in a systematic manner leading to the revitalisation of the rural economy and improved quality of rural life. The quality performance of rural roads relies on the following.

- Discrepancies in District Rural Roads Plans (DRRPs) need to be removed and scientifically collected information on the population of habitations, connectivity status, road inventory with maps and a GIS empowered database should be ensured. Such state-specific information base on rural roads would help covering unconnected but eligible habitations under PMGSY.
- Detailed project reports should be prepared by adopting laid-down procedures. Road works need to be completed with required number of bridges and cross drainage structures. The establishment of a vibrant monitoring and accountability mechanism is the need of the hour to check cases of undue advantage to road contractors and eliminate poor execution of such works.
- To ensure appropriate fund management within a road project, the States need to ensure adequate fund provisions and to ensure that their share is released as per the timelines and is not diverted to other schemes. The project should conform to the quality norms.
- There should also be a provision through which the States should commit to the maintenance of the road asset for five more years after the initial project tenure.
- Keeping in view the fund requirements and fund position for maintenance, it may be necessary to link the Finance Commission grant-in-aid with PMGSY work execution and maintenance.
- PMGSY has a time-tested quality control, monitoring and evaluation mechanism. As per the given standards of the quality benchmarks, the government should map the deficiencies to fix responsibility and accountability on agencies responsible for quality control at the local, state and national level.

Conclusion

Infrastructure provides the basic outline for economic and social progress of a country. The initiatives of the government for building rural infrastructure and the related central sponsored schemes envisage the enhancement of the socio-economic status of rural people. A considerable part of the total expenditure under such a programme is considered as development or capital expenditure. Many projects aiming at enhancing rural infrastructure including rural roads and bridge construction projects are also routed through the National Bank for Agriculture and Rural Development (NABARD) – the apex financial body for agriculture and rural infrastructure.

India's mission of a vibrant Aatma Nirbhar Bharat can be realised through a reinforced rural infrastructure. Better rural infrastructure – be it surface, air or water transports, telecom, rural marketing, warehouses, or water supply and power, is capable of facilitating better avenues for rural growth and of appropriately remunerating the activities of the farmers, manufacturers, and service providers in a rural setup.

Rural roads are recognised as catalysts to rural development and a significant element of poverty alleviation initiatives. Considering the importance of infrastructure in the sustenance of rural economic growth, the present government has continued laying emphasis on the creation of rural road infrastructure through development

plans and other subject-specific schematic interventions. The PMGSY roads are known for their construction quality and durability. To ensure quality in the construction of rural roads, vigorous quality control measures are followed, backed by independent quality checks and measurements. The inbuilt clause of five years of maintenance within the construction contract also helped in the maintenance of the newly created assets. Since all the eligible rural habitations have been connected, it is required now to strengthen and widen its ambit further to include major link routes which connect habitations to agricultural and rural markets, higher secondary schools and hospitals/ health centres. Further, existing roads which got constructed through the three phases of PMGSY shall have a robust maintenance framework with active participation of the respective State/UT Governments. As a follow-up action to the rural infrastructure building initiatives, a synchronised approach is required to establish rightful convergence with various other development-oriented programmes already in operation like programmes for alleviating poverty, generating gainful employment, ensuring social security, enhancing standard of health, hygiene, sanitation and education being implemented by Ministries/ Departments of Panchayati Raj, Rural Development, Drinking Water and Sanitation, Water Resources, Agriculture, Information Technology and Land Resources, etc. The future prosperity of rural India depends largely on how the road infrastructure is designed, facilitated, maintained, and made environmentally acceptable.

[The authors are Officer on Special Duty in the Ministry of Cooperation and Assistant Professor in Symbiosis School of Economics, Symbiosis International (Deemed University). Views are personal. E-mails: tripathy123@rediffmail.com / snehakumari1201@gmail.com]

Connecting Rural Health Services

Urvashi Prasad and Sanyam Kapur

The National Rural Health Mission envisaged architectural correction of the health system by building accountability to the community, management of human resources, convergence of efforts across departments, schemes and programmes, targeted innovations and interventions, flexible financing, as well as rigorous monitoring and evaluation for improvement of health indicators.

Spanning 29.8 lakh sq. km (approximately 90 percent of the land area)[1] and 6,38,000 villages, the rural healthcare system serves two-thirds of the country's population[2]. It truly characterises the country's nervous system with a network of government owned and operated Sub-Centers, Primary Health Centers (PHCs), and Community Health Centers (CHCs) designed to deliver primary healthcare to the rural population. Over the last several years, the Government of India through the National Health Mission, National Health Policy and Ayushman Bharat, among other initiatives, has improved the health of its population, narrowing the rural-urban and rich-poor divide. Yet, disparities remain, and rural healthcare is faced with several challenges. All stakeholders have widely acknowledged the importance of a comprehensive healthcare system, especially amidst the unprecedented COVID-19 pandemic.

Rural Healthcare System

The rural healthcare system is structured in three tiers. The tier wise categorisation, population norms, mandate, and staffing norms are illustrated below in Table 1.

[1]Census 2011
[2]World Bank 2019 estimates

Table 1: The Tier Wise Categorisation, Population Norms, Mandate, and Staffing Norms

Facility	Population Norm		Mandate	Minimum Staffing Norm[3]
	Plain areas	Hilly/tribal areas		
Sub-Centre (SC)	5000	3000	Provides a peripheral contact between PHC and Community	1 Female Healthcare Worker (HW)[4]/ANM[5] and 1HW (Male)
Primary Health Centre (PHC)	30000	20000	Referral unit for 6 SC with 4 to 6 beds	A total staff of 15 including a Medical Officer (MO), Staff Nurse, ANM, Health Assistant (M&F), Lady health Assistant (LHV), Upper Division Clerk, Lower Division Clerk, Lab Technician, Driver, Class IV
Community Health Centre (CHC)	120000	80000	A 30-bed hospital or referral unit	A total staff of 25 including 4 MO (qualified/ trained to work as Surgeon/Obstetrician/Physicians and Paediatrician), 4 Staff Nurse (SN), 4 Ward Boys, 1 Radiographer, 1 Lab technician, 1 Dresser, and 7 support staff

The National Rural Health Mission (NRHM) was launched in 2005 to provide healthcare services to the rural population initially with a focus on 18 states which had weak public health indicators and/or weak infrastructure. The states included Sikkim, Chhattisgarh, Jharkhand, Jammu and Kashmir, Himachal Pradesh, Manipur, Mizoram, Meghalaya, Madhya Pradesh, Nagaland, Arunachal Pradesh, Assam, Bihar, Orissa, Rajasthan, Tripura, Uttarakhand, and Uttar Pradesh. The mission envisaged architectural correction of the health system by building accountability to the community, management of human resources, convergence of efforts across departments, schemes and programmes, targeted innovations and interventions, flexible financing, as well as rigorous monitoring and evaluation for improvement of health indicators. Also, the Mission committed to increasing public expenditure on health from 0.9 percent of GDP to 2-3 percent of GDP.

The core strategies of NRHM are as follows:

- Capacity enhancement of Panchayati Raj Institutions (PRIs) to own, control and manage public health services,
- Developing a health plan for each village through the Village Health Committee of the Panchayat,
- Developing and implementing an inter-sectoral District Health Plan, including drinking water, sanitation and hygiene, and nutrition through the District Health Mission,
- Strengthening effective curative care at rural hospitals and ensuring measurability and accountability through Indian Public Health Standards (IPHS),
- Capacity development for promoting healthy lifestyles and adoption of preventive healthcare. Also, promoting collaboration with the non-profit sector, especially in underserved areas.

Gaps in Rural Health Services

Detailed information on health infrastructure and human resources is provided in the Annual Rural Health Statistics Report. The Report highlights vast resource gaps which hinder the rural population from accessing quality healthcare. The findings showcase infrastructural improvement with PHCs housed in government buildings increasing from 69 percent in 2005 to 89 percent in 2020; CHCs in government buildings increased from 84 percent in 2005 to 96 percent in 2020.

In terms of manpower, however, it was found that a large proportion of posts are vacant across

[3]As prescribed by NRHM
[4]Healthcare worker
[5]Auxiliary Nurse Midwife

all tiers of the health system. At the PHCs, as of 31 March, 2020 approximately 40 percent of the posts sanctioned for Health Assistants (both male and female) were found vacant. The Report also notes a shortfall of approximately 70 percent of health assistants (male and female). Additionally, around one-fourth of the sanctioned posts of doctors were found vacant. The Report brought forth the manpower situation at CHCs as of 31 March, 2020 wherein, 68 percent of Surgeon, 56 percent of Gynaecologist/Obstetrician, 67 percent of Physician, and 63 percent of Paediatrician positions were found to be vacant.

Strengthening Rural Health Services

Experiences and evidences from different states in India and across the world can be leveraged to guide improvements in healthcare in rural India.

(a) Connecting Communities through Technologies

Rural India witnessed three times the percentage growth compared to urban internet users which increased 4 percent in 2020. Overall, internet users comprise 67 percent of the urban population and 30 percent of the rural population, according to The Internet and Mobile Association of India (IAMAI) Kantar's 'ICUBE 2020' report. This rapid expansion of mobile phones and the internet can be leveraged by taking advantage of technological advancements in delivering e-health services. Telehealth can be used to increase access to specialist consultations from an accessible PHC/CHC.

The Government of India has piloted several projects to deliver telehealth with the Indian Space Research Organisation (ISRO), Department of Information Technology (DIT), Ministry of External Affairs, Ministry of Health and Family Welfare, and various state governments. A key initiative is ISRO's Village Resource Centre (VRC) which provides a variety of services such as education, telemedicine, online-decision support, interactive farmers' advisory services, tele-fishery, e-governance services, weather services, and water management. VRCs serve as learning centers as well as provide connectivity to specialty hospitals, thus bringing the services of specialist doctors to remote villages. Nearly 461 VRCs have been established in the country with nodes including 81 expert centres. Similarly, the Indian Council for Medical Research's, *Arogyasri,* is another internet-based mobile telemedicine system that integrates multiple hospitals, mobile medical specialists, and rural mobile units/clinics.

The adoption of telemedicine has been accelerated considerably during the COVID-19 pandemic thereby providing an important opportunity to extend its coverage to various parts of the country and connecting citizens with quality as well as timely medical advice from doctors and specialists.

(b) Analysing Data on Key Health Parameters to Undertake a Pulse Check on the Nation's Health

Information from the National Family Health Survey, Annual Health Survey, and Rural Health Statistics Report enables the Government of India to evaluate and course-correct policies and programmes related to population health and nutrition. Concurrent diagnosis and consolidated efforts in the monitoring of healthcare-related input, output, and outcome indicators can provide concurrent insights into the bottlenecks and areas for improvement with respect to increasing access to quality healthcare. NRHM's Management Information Systems (MIS) are intended to monitor the health indices of the population and the functioning of the healthcare system. However, it could benefit from rigorous monitoring of fund utilisation and engagement of local communities.

(c) Embedding Comprehensive Healthcare Management in Nursing and Medical Education to Efficiently Serve Rural Communities

The objective of primary healthcare is to provide gate keeping functions and deliver a range of basic services. This would lead to appropriate utilisation of primary health facilities and reduce the burden at the secondary and tertiary levels of care by reducing unnecessary referrals. Creating cadres of health professionals from the rural areas themselves who can be trained to deliver essential

and basic health services is of the essence. An example of this is the Mid-Level Providers who are a key part of the team at Health and Wellness Centres being operationalised under the Ayushman Bharat programme.

(d) Revitalising the Trust of Communities in Primary Healthcare to Minimise the Burden on Secondary and Tertiary Healthcare Facilities

In an ideal healthcare system, the primary care level serves as the first point of contact for patients and also integrates seamlessly with other levels of the health system. However, due to gaps in implementation, many patients first encounter the health system at the secondary or tertiary levels of care. Evidence suggests that community participation including household visits by health staff, group meetings for education and support on health issues, as well as outreach workers providing health services in the community can go a long way in bolstering community engagement. Therefore, a focused approach toward community involvement integrated with strong referral mechanisms has the potential to revitalise the trust of communities in the public health infrastructure.

(e) Providing Accommodation and a Supporting Ecosystem for Medical Doctors and Their Families

The Shyama Prasad Mukherji Rurban Mission (SPMRM) of the Ministry of Rural Development envisages the infrastructural development (technological and basic services) of village clusters that stimulate economic development in the area. Panagariya, 2014 provides consideration to a housing township wherein government employees of all the departments (health, education, water and sanitation, police, bank, road and transport, post and telecom) can be housed at the block level. Provision of facilities like schools, playgrounds, community centres, supermarkets, etc. can provide a significant stimulus to the workforce which is otherwise discouraged to locate themselves in rural areas. The National Thermal Power Corporation townships (Lakhimpur Kheri, Uttar Pradesh and Korba, Chhattisgarh) and Indian Oil's township (Barauni, Bihar and Noonmati, Guwhati) attract and retain talented individuals. Alongside competitive salaries, such townships can play an important role in encouraging Indian doctors and specialists to be based in these RURBAN areas and serve the rural population.

(f) Focusing on Social Determinants of Health

There are certain initiatives of the Government which also have a critical albeit indirect impact on strengthening access to health services for the rural population. For instance, the Pradhan Mantri Gram Sadak Yojana (PMGSY) has provided all weather road connectivity to around 1,55,719 habitations since its inception till 10 March, 2022. In 2019, the Government launched PMGSY-III for consolidation of 1,25,000 km through routes and major rural links connecting habitations to hospitals, among other essential facilities. Similarly, schemes which aim to alleviate poverty, deliver education and nutrition services as well as provide suitable economic opportunities play a crucial role directly and indirectly strengthening the linkages between people in rural areas and essential health services.

(g) Prioritising Primary Healthcare to Address Rural-Urban Gaps

The Annual Rural Health Statistics Report throws light on gaps in manpower and infrastructure in rural areas which need to be addressed. The 15th Finance Commission also recommended a strong focus on primary healthcare. Thus, it is imperative that budgetary allocations and implementation of key initiatives like the National Health Mission, Pradhan Mantri Jan Arogya Yojana (PM-JAY) are prioritised. An important step by the Government in this context has been the launch of the Pradhan Mantri Swasthya Suraksha Yojana (PMSSY) which aims to rectify the inequities in the availability of affordable healthcare facilities across the country.

Conclusion

Thus, while examples of efforts in connecting rural health services are ample across the nation, they are fragmented with regional successes. The National Rural Health Mission through its Nationwide purview and with its financial and human resource can identify, adopt and scale such innovative solutions to address the equity gaps in rural areas. The 15th Finance commission also commended a strong focus on primary healthcare.

*(The authors are Director, DMEO and Monitoring and Evaluation Lead, DMEO, NITI Aayog respectively. Views expressed are personal. Email - urvashi.prasad@nic.in and sanyam.91@*nic.in)

BharatNet: Bringing Broadband to Rural India

B S Purkayastha

India moves closer to its dream of reliable rural internet connectivity, with more than 1,77,000 Gram Panchayats made service ready under the BharatNet project. This article focuses on the ambitious BharatNet project which aims to provide broadband/high speed internet connectivity to all the Gram Panchayats (GPs) in the country. The project is being implemented in a phased manner.

Internet connectivity in rural India has been increasing at a fast pace, with the rural internet user base growing around three times faster than its urban counterpart. According to the Network Readiness Index-2021, India has jumped to 67 rank in 2021 from 88 in 2020. Rural tele-density has jumped from 44 percent in March 2014 to 59 percent in December 2021. Meanwhile, rural telephone connections rose from 38 crore in March 2014 to 52.3 crore in December 2021. According to Telecom Regulatory Authority of India(TRAI) data for July-September 2021, rural internet subscribers stood at 336.6 million while urban internet subscribers numbered 497.69 million. Data consumption through BharatNet optical fibre surpassed 13,000 terabytes (TB) till June 2021. This is an increase from 6,000 TB in 2020 and 300-400 TB in July 2019.

Despite all the hurdles, India has been gradually expanding the rural internet connectivity. High speed internet facility is being provided in rural areas by the government and the Telecom Service Providers (TSPs) through 3G/4G wireless mobile and fixed wire line broadband. It is estimated that out of 5,97,618 inhabited villages in the country, as per Census 2011, 5,72,551 villages have been provided with mobile and internet connectivity. This estimate is further reinforced by the fact that we have 1.18 billion mobile connections and 600 million smart phones in the country, with a sizeable number in the hinterland. Similarly, data usage has increased from 61.66 MB per subscriber per month in year 2014 to 14.1 GB per subscriber per month in year 2021.

Mobile and Internet Services in Rural India

The Government of India through various schemes approved under Universal Service Obligation Fund (USOF), is providing mobile and internet services in rural areas and areas affected by Left Wing Extremism (LWE). The list of schemes and their status of implementation as of March 2021 is given below:

i. As per Ministry of Home Affairs (MHA), 90 districts falling under 11 States are affected by Left Wing Extremism (LWE). In these 90 districts, 85,894 villages are having mobile and internet services out of total number of 96,794 inhabited villages (as per Census-2011). Under LWE Phase-I scheme, 2,343 mobile towers have been installed in LWE areas across LWE States and are providing services. Under LWE Phase-II scheme, 2,542 mobile towers at locations identified by Ministry of Home Affairs (MHA) are approved across the LWE States.

ii. Scheme for providing mobile connectivity in 354 villages of uncovered border areas including Ladakh and Kargil Region, Himachal Pradesh, Uttarakhand and other priority areas. As of October 2021, around 210 villages have been covered with mobile services.

iii. Comprehensive Telecom Development Plan (CTDP) for mobile connectivity in the North East Region (NER) consisting of following components, to provide mobile coverage in

uncovered villages and along with the National Highways:

(a) CTDP for NER States of Assam (except 2 districts of Karbi Anglong and Dima Hasao), Manipur, Mizoram, Nagaland, Sikkim, and Tripura for installation of 2,004 mobile towers for provision of mobile services in 2,128 uncovered villages and mobile connectivity along National Highways;

(b) Scheme for installation of 889 towers for provisioning of mobile services in 1164 uncovered villages and along National Highways in the State of Meghalaya;

(c) Scheme for installation of 1,533 towers for provisioning of mobile services in 2,374 uncovered villages of Arunachal Pradesh and 2 Districts of Assam, i.e. Karbi Anglong and Dima Hasao. The projects under the three components are under implementation and as of October 2021, a total of 1,358 towers have been installed, covering 1246 villages and 283 National Highway sites.

iv. Scheme for providing 4G mobile connectivity in 502 uncovered villages of Aspirational Districts in four States; namely, Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan. The government in November 2021 has further accorded to provide 4G based mobile service in 7,287 uncovered villages of Aspirational Districts of five States, namely; Andhra Pradesh, Chhattisgarh, Jharkhand, Maharashtra and Odisha.

v. BharatNet project for providing broadband connectivity in all the Gram Panchayats (approx. 2.5 lakh) in the country.

vi. Laying of submarine Optical Fibre Cable (OFC) between Chennai and Andaman & Nicobar Islands for providing connectivity to Andaman & Nicobar Islands. The undersea 2,313 km optic fiber-based telecom connectivity between Chennai and Andaman & Nicobar Islands was inaugurated in August 2020.

vii. The government has approved a proposal for provision of submarine Optical Fiber Cable Connectivity by laying approximately 1,891 km of submarine cable between Kochi and Lakshadweep Islands. The project is under implementation and targeted to be implemented by May 2023.

viii. Mobile connectivity to cover uncovered villages and along National Highway (NH 223) in Andaman and Nicobar Islands.

ix. Mobile connectivity has been enhanced in Lakshadweep Islands by installing ten mobile towers.

x. Satellite bandwidth augmentation upto 4 Gbps for Andaman and Nicobar Islands.

xi. High capacity satellite-based connectivity for Lakshadweep for providing broadband services was launched in August 2021. Under this Satellite project, the bandwidth has been enhanced from 318 Mbps to 1.71 Gbps for Lakshadweep Islands. For Agathi, Androth, Minicoy and Kavaratti Islands, the bandwidth has been enhanced by 200 Mbps, whereas for Amini, Chetlat, Kalpeni, Kadmath, Kiltan and Bitra Islands, the bandwidth has been enhanced by 100 Mbps.

BharatNet Project: Building the Base for Rural Internet Connectivity

This article focuses on the ambitious BharatNet project which aims to provide broadband/high speed internet connectivity to all the Gram Panchayats (GPs) in the country. The project is being implemented in a phased manner. The number of GPs has now increased from about 2,50,000 initially to 2,62,825, as in the intervening period new GPs have been notified by the State Governments. Special purpose vehicle (SPV) Bharat Broadband Network Ltd. (BBNL) was formed in February 2012, to lay out optical fibre network across 2.5 lakh village Panchayats across the country using USOF and provide its access to all telecom operators on a non-discriminatory basis.

The Phase-I has been implemented by laying incremental underground Optical Fibre Cable (OFC) in linear topology with Gigabit Passive Optical Network (GPON) technology. The implementation of Phase-II is by connecting GPs through an optimal mix of media (i.e. OFC, radio and satellite) and by laying new OFC from Block to GPs.

Table 1: BharatNet Status as on March 21, 2022

Wi-Fi Installed in GPs	Installed: 1,04,288
	Active: 53,353
FTTH Connections	2,14,174 (Commissioned)
Dark Fibre (KM)	37294.04
Usage (Wi-Fi/FTTH)	Bandwidth: 4,038.744 (Gbps)
	Data Consumption (Feb 2022): 4028.87 TB
Length of OFC laid	5,70,115 Km
Number of GPs connected by OFC (OFC Laid GPs)	1,83,306
Number of GPs Made Service Ready (On fibre and satellite)	1,77,015

Source: Bharat Broadband Network Ltd.(https://bbnl.nic.in/)

The infrastructure created under BharatNet project is a national asset, accessible on a non-discriminatory basis to all service providers, and the same can be utilised for provisioning of broadband/internet services through Wi-Fi Hotspots, Fibre to the Home (FTTH) connections, leased lines, Dark Fibre, backhaul to mobile towers, etc. Out of the aforesaid GPs, provisioning of FTTH connections to five government institutions per Gram Panchayat is also included in approximately 77,000 GPs.

As part of the BharatNet project, the last mile connectivity is being provided through Wi-Fi or any other suitable broadband technology, including FTTH. In approximately 1.20 lakh GPs of BharatNet Phase-I, the provisioning of Wi-Fi Services in about 1.10 lakh GPs has been assigned to CSC e-Governance Services India Ltd. (a SPV under Ministry of Electronics and Information Technology).

Moving to a Public-Private Partnership Model

In June 2021, the scope of BharatNet was extended up to all inhabited villages beyond GPs, along with approval for a revised strategy for implementation (creation, upgradation, operation and maintenance and utilisation of network) of BharatNet through Public-Private Partnership (PPP) model, covering 3.61 lakh villages including GPs across 16 states of the country. These States are Kerala, Karnataka, Uttar Pradesh, Madhya Pradesh, Rajasthan, Punjab, Himachal Pradesh, Haryana, West Bengal, Assam, Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland and Tripura. Request for Proposal (RFP) has been floated for implementing the project for 16 States under PPP model on 20 July 2021. Further, the Union Cabinet has also given in-principle approval for extending village connectivity under BharatNet for all the remaining States/UTs. Further, it has approved to extend Optical Fiber connectivity under BharatNet up to all inhabited villages in the country.

The time-line for providing connectivity to all villages including GPs in the country under BharatNet was initially August 2023, now extended to 2025. Under BharatNet Phase-II, about 65,000 GPs in eight states are being implemented under State-led model. The implementation of the project is affected mainly on account of widely dispersed GPs across remote corners of the country, covering difficult terrains (including hilly/ rocky), Right of Way (RoW) issues and also difficulty of access in Left Wing Extremism (LWE) affected areas.

Making Progress: Overcoming Hurdles

For instance, in Tamil Nadu which has about 17,287 villages (including 12,520 GPs), no GP has been made service ready. Phase-I of BharatNet was not taken up in Tamil Nadu. BharatNet Phase-II in Tamil Nadu is being implemented by the state government covering all GPs of the State. The project is being implemented under four Packages. Again, Assam has about 27,912 villages (including 2,664 GPs). As of December 2021, 1,507 GPs have been made Service Ready. The remaining 26,405 villages/GPs in the state have the timeline as August 2023 for their implementation under the project.

In Maharashtra, the Phase-I was implemented through Bharat Sanchar Nigam Limited (BSNL) and in Odisha, the Phase-I was implemented through Powergrid Corporation of India Limited (PGCIL). In Maharashtra, 19,262 FTTH connections have been provided and Wi-Fi hotspots are installed in 11,014 GPs.

Phase-II of BharatNet is implemented in Odisha in State-led model through the State Government under which, 2,786 GPs have been made Service Ready out of 2,946 planned GPs. Further, 22 GPs have been made Service Ready on Satellite media out of 43 planned GPs. Under Phase-I, a total number of 3,810 GPs were taken up for implementation through PGCIL, out of which 3,809 GPs have been made Service Ready. In total, 6,617 GPs have been made Service Ready in Odisha, as on February 2022. In Odisha, 8,611 FTTH connections have been provided and Wi-Fi hotspots are installed in 2,511 GPs. BBNL has signed 50 agreements with Service Providers for providing broadband services across various States (including 10 agreements for Maharashtra and one agreement for Odisha) by utilising BharatNet Phase-I network. Further, two agreements have been signed with Service Providers for providing services on an All India basis (including Maharashtra and Odisha).

Rajasthan has about 46,343 villages (including 11,341 GPs). These include 5,697 villages having tribal population more than 50 percent and declared as Scheduled Areas. So far, 8,769 GPs have been made service ready under BharatNet Project, as of December 2021.

As on February 2022, total 24,521 FTTH connections have been provided and Wi-Fi hotspots have been installed in 5,344 GPs in Bihar.

Table 2: BharatNet status as on 31-12-2021 of Phase-I and Phase-II, State/UT-wise

S. No.	State/UT	GPs Planned in Phase-I	GPs Planned in Phase-II	Total Planned	GPs Service ready in Phase-I	GPs Service ready in Phase-II	Total Service Ready GP
1	Andaman and Nicobar Islands	66	4	70	20	4	24
2	Andhra Pradesh*	1692	11734	13426	1680	27	1707
3	Arunachal Pradesh	79	1717	1796	79	689	768
4	Assam	1506	1158	2664	1502	5	1507
5	Bihar	5720	2685	8405	5654	2645	8299
6	Chandigarh	12	0	12	12	0	12
7	Chhattisgarh	4048	7634	11682	4048	4571	8619
8	Daman & Diu and Dadra & Nagar Haveli	36	2	38	38	0	38
9	Goa#		191	191		0	0
10	Gujarat*	6595	7692	14287	6430	7588	14018
11	Haryana	6082	177	6259	6082	0	6082
12	Himachal Pradesh	252	2974	3226	251	155	406
13	Jammu &Kashmir	413	3868	4281	408	647	1055
14	Jharkhand*	2707	1688	4395	2583	1558	4141
15	Karnataka	6084	2	6086	6083	0	6083
16	Kerala	977	1	978	977	1	978
17	Ladakh	0	193	193		188	188
18	Lakshwadeep	0	10	10	0	9	9
19	Madhya Pradesh	12544	10297	22841	12533	4491	17024

(Figure continued on page no 20)

S. No.	State/UT	GPs Planned in Phase-I	GPs Planned in Phase-II	Total Planned	GPs Service ready in Phase-I	GPs Service ready in Phase-II	Total Service Ready GP
20	Maharashtra	15171	13066	28237	15159	6606	21765
21	Manipur	320	2465	2785	315	1121	1436
22	Meghalaya	122	1669	1791	122	503	625
23	Mizoram	41	722	763	41	411	452
24	Nagaland	127	867	994	116	114	230
25	Odisha	3810	2989	6799	3809	2644	6453
26	Puducherry	98	10	108	98	0	98
27	Punjab	7948	5389	13337	7951	4717	12668
28	Rajasthan	8747	2605	11352	8739	30	8769
29	Sikkim	49	136	185	22	1	23
30	Tamil Nadu*$	0	12520	12520	0	0	0
31	Telangana*	1946	10823	12769	1946	4471	6417
32	Tripura	584	437	1021	578	142	720
33	Uttar Pradesh	28031	31334	59365	27844	6836	34680
34	Uttarakhand	1831	6131	7962	1513	129	1642
35	West Bengal	2676	672	3348	2308	0	2308
	Total	**120314**	**143862**	**264176**	**118941**	**50303**	**169244**

Source: http://164.100.24.220/loksabhaquestions/annex/178/AU124 pdf

*Note: *: The Phase-II is being implemented under State-Led model in these States. $: Tamil Nadu State Government signed the MoU with Universal Service Obligation Fund (USOF) on 31.03.2017 for implementation of BharatNet project. Phase-I of BharatNet was accordingly not taken up in Tamil Nadu and the State's GPs are being implemented in Phase-II under State-Led model. #: Goa had its own similar broadband network and thus not taken up under Ph-I & Phase-II of BharatNet Project. Delhi has no GPs and thus not taken up under BharatNet Project.*

Making the Money Count

The State/UT-wise funds allocation is based on the requests received from the implementing agencies. As on 31 December 2021, an amount of about Rs. 27,582.72 crore has been allocated/released/ utilised under BharatNet Project in the country.

Table 3: State-wise details of funds allocated/ released/ utilized under Phase-I and Phase-II of BharatNet as on 31.12.2021 (Figures in Rs. crore)

	State/ UT	Disbursed funds under Phase-I	Disbursed funds under Phase-II
1	Andaman and Nicobar Islands	17.19	0.00
2	Assam	225.98	0.16
3	Bihar	680.41	670.45
4	Chandigarh	0.04	0
5	Chhattisgarh	673.98	1224.14
6	Haryana	504.64	0.00
7	Jammu & Kashmir	86.03	29.15
8	Karnataka	1023.89	5.87

(Figure continued on page no 21)

	State/ UT	Disbursed funds under Phase-I	Disbursed funds under Phase-II
9	Kerala	149.89	0.00
10	Maharashtra	2082.13	1698.58
11	Madhya Pradesh	2079.06	1607.42
12	Punjab	555.48	524.50
13	Rajasthan	1296.48	68.67
14	Uttar Pradesh	1990.29	2279.77
15	Uttarakhand	290.76	6.17
16	West Bengal	507.50	2.24
17	Sikkim	15.34	65.05
18	Puducherry	6.90	0.00
19	Arunachal Pradesh	76.14	29.44
20	Manipur	57.11	13.37
21	Meghalaya	82.93	10.56
22	Mizoram	62.21	4.31
23	Nagaland	91.73	0.62
24	Tripura	86.67	2.89
25	Gujarat, Dadra & Nagar Haveli, Daman & Diu	634.87	2266.00
26	Telengana	264.20	632.04
27	Odisha	604.53	456.73
28	Jharkhand	328.59	543.61
29	Himachal Pradesh	86.43	29.15
30	Andhra Pradesh	322.32	327.13
31	Tamil Nadu	10.82	150.08
32	Lakshwadeep	0.10	0.00
33	Ladakh	0.00	0.69
	Total	14894.65	12688.07

Source: http://164.100.24.220/loksabhaquestions/annex/178/AU4449.pdf

The total approved cost for BharatNet project is now Rs. 61,109 crore. This includes Rs. 42,068 crore for BharatNet (Phase-I and Phase-II) and a maximum of Rs. 19,041 crore on Viability Gap Funding (VGF) for implementation of the Public Private partnership (PPP) model of BharatNet in 16 States. Since the approval for extending fiber connectivity to all inhabited villages in the country has been taken very recently, the estimated incremental cost for the same for all the States/ UTs has not been finalised.

During the last three years (2018-19 to 2020-21) and the current year (2021-22) up to February, 2022, Rs. 17,565.35 crore has been disbursed under the BharatNet Project from Universal Service Obligation Fund (USOF).

Bridging the Rural-Urban Divide

Extension of reach of BharatNet to all inhabited villages with reliable, quality, high speed broadband will enable better access of e-services offered by various central and state government agencies. It will also enable online education, telemedicine, skill development,

e-commerce and other applications of broadband, all of which are essential for rural India to be part of the Digital India initiative. It is expected that revenue will be generated from different sources including proliferation of broadband connections to individuals and institutions, sale of dark fibre, fiberisation of mobile towers, e-commerce, etc.

Proliferation of broadband in rural areas will bridge the rural-urban divide of digital access and accelerate the achievement of Digital India. The penetration and proliferation of broadband is also expected to increase direct and indirect employment and income generation. PPP Model in this critical infrastructure is a novel initiative. The private sector partner is also expected to bring an equity investment and raise resources towards capital expenditure and for operation and maintenance of the network. Hence, the PPP Model for BharatNet will enhance efficiency, quality of service, consumer experience, and leverage private sector expertise, entrepreneurship and capacities for accelerating achievement of digital India. This will be in addition to substantial savings of public money.

BharatNet PPP Model will bring in the following consumer friendly advantages:

(a) Use of innovative technology by the Private Sector Providers for the consumers;

(b) High quality of service and service level to consumers;

(c) Faster deployment of network and quick connectivity to consumers;

(d) Competitive tariffs for services;

(e) Variety of services on high-speed broadband including Over the Top (OTT) services and multi-media services as part of packages offered to consumers, and

(f) Access to all online services.

PM-WANI: An Additional Advantage

Along with the BharatNet project, the government has approved the proposal to proliferate broadband through Public Wi-Fi Networks under the framework of Prime Minister's Wi-Fi Access Network Interface (PM-WANI). It is expected that with Public Wi-Fi Broadband, the user experience and Quality of Service for Broadband will be improved significantly. This service will be especially useful in rural areas where Public Wi-Fi Hotspots are also being created under BharatNet. Proliferation of Public Wi-Fi Hotspots will lead to increased employment for small and micro entrepreneurs, and provide them with an additional source of income. Under the PM-WANI framework, online registrations of Public Data Office Aggregators (PDOAs) and App providers began on 07 January 2021. As on 23 November 2021, a total of 125 Public Data Office Aggregators (PDOAs) and 63 App Providers have been registered by DoT and more than 50,000 Access points have been deployed under PM-WANI.

Conclusion

As Indians remained locked in their homes in the early days of the pandemic in 2020 and road and rail transport screeched to a halt, the importance of reliable channels of communication was strongly felt, especially in the rural hinterlands. It was to internet connectivity that the country increasingly turned to keep the wheels of the economy moving. Now, as the pandemic situation eases and life gradually becomes normal, the reliance on internet connectivity continues. While much of urban India has been able to benefit from working and learning from the safety of their homes, financial limitations in accessing the internet by the rural poor prohibit them from benefitting from the digital revolution. This indicates that while much has been done to expand rural internet infrastructure, much more needs to be done to bring reliable and accessible internet connectivity to the rural masses such that they do not miss out on the digital revolution. Even as the government expands the rural internet network through BharatNet and other programmes, it will also have to address the problem of cost of access to the internet so as to make it affordable enough to bridge the digital divide.

References

Lok Sabha questions, PIB, Websites of BBNL and TRAI

(The author is a Delhi based journalist. Views expressed are personal. Email: ideainks2020@gmail.com)

Socio-economic Impacts of National Highways

Dr. Debabrata Samanta

Roads are vital in any development agenda. National Highways play significant role in transforming rural areas though better access to health and education, transforming agriculture, land use and nature of employment opportunities. The current development paradigm in India indicates pushing forward economic growth though development of physical infrastructure and development of quality national highways are part of the commitment of inclusive and sustainable growth. The initiatives like PM Gati Shakti and Bharatmala Pariyojana are examples of creation of strong multiplier effect of public expenditure on income and standard of living of people of rural India.

In any country roads act as the arteries through which the blood of development runs. By linking producers to markets, workers to jobs, students to school, and the sick to hospitals, roads are vital to any development agenda. Improved road infrastructure not only increases growth of an economy, it as well ensures the growth to be inclusive and sustainable. Developing physical infrastructure like road network and transport facility play significant role in changing socio-economic condition and standard of living of people of a region or country. Physical infrastructures like roads have multiplier effect on economic development of the region and standard of living of people. A wide range of social and economic impacts can emerge from rural road development, from physical connectivity improvements (i.e., shorter distances and travel times) to long-term economic impacts, such as job creation and welfare improvement. Adam Smith realised the importance of access to mobility and transport, as he pointed out that providing greater access to market, transport would bring about the specialisation and division of labour and thus foster process of economic growth. The importance of having proper road network in India was realised even before independence. In 1941, the Road Development Plan has classified roads into five categories namely, National Highways (NH), State Highways (SH), Major District Roads (MDR), Other District Roads (ODR) and Village Roads (VR). Out of them the ODR and VR are being categorised as Rural Roads. In the third road development plan (1981-2001) new accessibility criteria for village road were introduced and several approaches for rural road development were suggested (Sarkar, 2007). The current development paradigm of India also emphasises on economic development through building physical infrastructure. Post pandemic, to recover the economic growth in India, development of physical infrastructure has been emphasised. The PM Gati Shakti programme has been launched to expedite the infrastructure and road development in India.

Theoretical Framework

The highways are one of the most important parts of means of communication in India. Generally, the development of highways create impact on lives of people, especially rural people living in proximity in two ways; namely (i) direct impact in the form of enhancement of spatial connectivity, which increase mobility of people and freight, (ii) the reduction of the cost of provision as well as the cost of use of road infrastructure. All this access to highway causes higher mobility and lower travel cost. The other indirect effects of highways are generation of developmental externalities generated through forward and backward linkages (Sengupta, Coondoo, & Rout, 2016). The development of transport system is augmented by development of highways. Development of transport system and economic development are not only interdependent; they share a very dynamic relationship. The development of highways tends to change the agricultural practice as well as pattern of settlement in the proximity areas. The presence of highway induce farmer to change cropping pattern and to move to more cash crops. Better road connectivity in rural areas increase school attendance, particularly of girls. It also contributes to increasing household income and creating more agricultural jobs in certain regions (Iimi, Lancelot, Manelici, & Ogita, 2015). One of the most important implications of development of highways in rural areas is change in the land use pattern. The new land use pattern induced by the development of highway creates more provision for non-farm sector development. The change also creates conducive environment for location and development of industries, trading and other services, which are of non-farm category. The development of highways reduces the dependency of rural people on farm-based livelihood practices and provides options of non-farm based livelihood practices as well initiates development of service sector. These developments tend to create changes in the pattern of economic activities, income generation, price evolution, employment conditions in the proximity rural areas. All these activities induce change of land use from agriculture to non-agricultural use. These new land use pattern may in turn induces greater accessibility to job markets, health and educational facilities, attract investment for the development of feeder roads, power distribution networks, telecommunication facilities and other modes of connectivity among others, leading to a greater access of the local people to markets and infrastructural facilities. All of these cause transformation in the level of well being of the households of the proximity areas. It has been found that closer the household from the highway, better the availability of mobility and other connectivity facilities and amenities of life. The optimum impact of highway on local rural population in proximity has been estimated by the study by Asian Institute of Transport Development (2011) and it is found that the villages within 4-5 km of highway have shown marked changes compared to other villages with greater distance.

Evidence from India

The change in socio-economic situation of rural population in proximity of a national highway (NH) has been tested by various research studies. It has been found that in developing economies like India, a large public investment project on road infrastructure development, plays crucial role in reducing rural poverty and enhancing socio-economic well being of the people living in proximity of highways (Sengupta, Coondoo, & Rout, 2016).

The study by Basak & Siddique (2018), in the context of West Bengal for the Highway NH2 found that due to development of the highway the transport facilities and communication system have been developed, which simultaneously have brought in a huge change in the employment opportunities in surrounding areas. The study found that, due to development of the highway a number of new employment opportunities have emerged in diverse sectors related directly or indirectly to the NH. New income opportunities have emerged that are beneficial to local people of surrounding villages. The study found many fold enhancement of price of the land on both sides of the highway within a very short period of time. However, this also has paved way for incidence of land grabbing and filling up water land causing negative impact on environment.

Over the years the national highways has emerged as an integral part to transform local

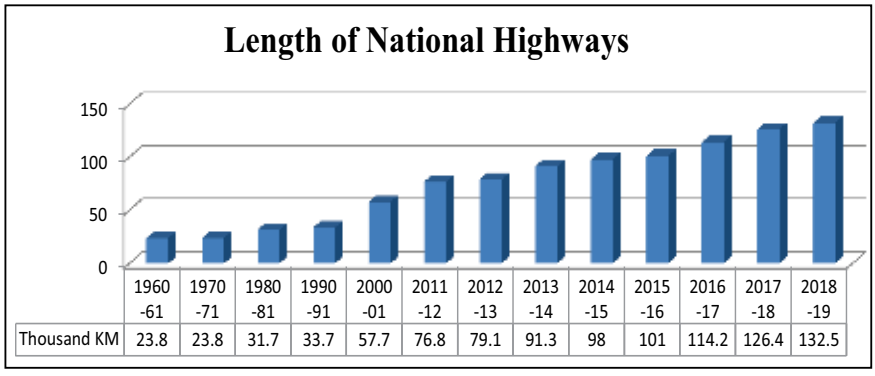
rural economies. It is evident that the proximity of highway has improved educational outcome as the proportion of school going children especially girls found to have increased. The proximity of households with highway also found to have impact on access to health. The study of Sengupta, Coondoo, & Rout (2016) found that highways lead to enhancement of accessibility to health by rural population living in the proximity.

In the context of India, the study by the Asian Institute of Transport Development (2011) found that the net benefit of developed highway mostly relate to improvement in access to work and educational opportunities. The study found three-fold increase in the share of income from non-agricultural activities; 85 percent increase in female labour force participation and about 50 percent increase in school enrolment. The report empirically tested the theory and confirms that proximity to highway has a positive relationship with: (i) demographic characteristics (density of population), (ii) proportion of BPL households (iii) share of motorised transport, (iv) employment in non-farm activities (proportion of non-agricultural workers in total main workers), (v) housing conditions, (vi) enrolment of students and also that of girl students, and (vii) price of land.

Current Status and Policy Paradigm

In an economy, spending on infrastructure creates multiplier effect on creation of additional income. In the context of India, the estimated value of the capital expenditure multiplier is 2.45 (Bose & Bhanumurthy, 2013). This implies every one rupee spent as capital expenditure creates 2.45 rupees income in the economy. Capital expenditure has a direct link with spending on creating new infrastructure. In last 60 years the development of highways has increased many folds in India. There has been a constant and consistent increase in construction of highways each year in last few decades. This reflects strategic orientation and emphasis upon physical infrastructure to push economic growth. The current policy paradigm also indicates increasing economic development through development of physical infrastructures like road and highways. The initiation of PM Gati Shakti to develop physical infrastructure is a welcome effort by current government. The following graph shows development of highway network in India over the years.

Graph 1: Length of National Highways over the years



	1960 -61	1970 -71	1980 -81	1990 -91	2000 -01	2011 -12	2012 -13	2013 -14	2014 -15	2015 -16	2016 -17	2017 -18	2018 -19
Thousand KM	23.8	23.8	31.7	33.7	57.7	76.8	79.1	91.3	98	101	114.2	126.4	132.5

Source: Economic Survey, 2021-2022, Ministry of Finance, Government of India

The 63.71 lakh km (till 2019) of the road network in India is the second-highest in the world, and there has been a constant increase in road network in India. The extent of road construction per day, as reported, has increased in 2020-21 to 36.5 kms per day from 28 kms per day in 2019-20, a rise by 30.4 percent. The total expenditure of the Ministry of Road Transport and Highways for 2021-22 is estimated at Rs. 1,18,101 crore. This is an annual increase of 23 percent over the actual expenditure for 2019-20. The Union Budget 2022-2023 aims for the formulation of Master Plan for expressways and completing 25,000 km national highways in 2022-23. An amount of Rs. 1,99,107.71 crores has been allocated for the year 2022-23 for the Ministry of Road Transport and Highways (Government of India, 2022). The analysis of expenditure reveals that the government has increased proportion of capital expenditure significantly with an objective of sustainable growth via development of physical infrastructure. It is evident that in 2021-22, more than 91 percent expenditure on total expenditure is of capital expenditure. The following table depicts that. This trend in expenditure and movement towards more capital expenditure indicates leveraging the possibilities of multiplier impact of public expenditure on physical infrastructure.

The highway connectivity in rural areas has impacts upon change in agriculture and crop pattern and enhance accessibility of education and health as well enhance value of land in proximity areas. Along with this, the improved connectivity through highway also provides an impetus to shift of livelihood practices and paves more opportunities in non-farm sector employment. India has emphasised economic growth via development of physical infrastructure long back.

Table 1: Budget allocations for the Ministry of Road Transport and Highways (in Rs. crore)

	2019-20	2020-21	2021-22	Change (Annualised) (Actuals 2019-20 to BE 2021-22)
	Actual	RE	BE	
Revenue	9,875	9,770	9,871	0%
Capital	68,374	92,053	1,08,230	26%
Total	78,249	1,01,823	1,18,101	23%

Sources: Demands for Grants 2021-22, Ministry of Road Transport and Highways; PRS.

Bharatmala Programme: The grand initiative of connecting large part of India through road connectivity has been initiated in 2017 under the Bharatmala Pariyojana scheme. The Bhartamala Pariyojana is a paradigm shift in the infrastructural development programme in India. The programme has been conceptualised as India's largest infrastructural programme. The programme aims to develop 34,800 km of National Highway corridors, connecting 600+ districts in the nation. Bharatmala Pariyojana is also expected to usher in a new age of technology driven highway development in the country through deployment of automatic traffic surveys and satellite mapping and imagery to identify upgradation requirements of corridors. Bharatmala Pariyojana focuses on development of 24,800 km of dedicated expressways, access-controlled economic corridors, associated feeder routes, coastal and port connectivity, and border and international connectivity corridors. In addition, 10,000 km of ongoing National Highways Development Project (NHDP) balance road work is envisioned as part of the overall program which will cover a total length of 34,800 km of highway. A total of Rs. 5,35,000 has been allocated for this programme. Once implemented, the programme will have multiplier effect on socio-economic situation of the proximity area as well as the country.

Conclusion

The strategy of pushing forward economic growth through development of physical infrastructure ensures inclusive as well sustainable growth of a country. Development of highways network is one of the strategies to push physical infrastructure endowment of a country. The highways create positive impact on socio-economic status of villages they pass through. A wide range of social and economic impacts, from physical connectivity to long-term economic impacts, such as job creation and welfare improvement emerge in rural areas from road connectivity. The highway connectivity in rural areas has impacts upon change in agriculture and crop pattern, enhance accessibility of education and health as well

enhance value of land in proximity areas. Along with this, the improved connectivity through highway also provides an impetus to shift of livelihood practices and paves more opportunities in non-farm sector employment. India has emphasised economic growth via development of physical infrastructure long back. There has been a consistent improvement in development of highway connectivity. However, the current paradigm in India indicates adoption of growth through development of physical infrastructure and a huge emphasis on development of highways. The initiative like PM Gati Shakti and programme like Bharatmala Pariyojana are examples of creation of strong multiplier effect of public expenditure on income and standard of living of people of rural India.

References

1. Asher, S., & Novosad, P. (2020). Rural Roads and Local Economic Development. *American Economic Review* , 110 (3), 797-823.
2. Asian Institute of Transport Development. (2011). *Socio-economic Impact of National Highway on Rural Populaton.* New Delhi: Asian Institute of Transport Development, New Delhi.
3. Basak, A., & Siddique, G. (2018). Economic Impact of National Highway 2: A Study of Its Section from Nababhat to Dankuni. *International Journal of Scientific Research and Review , 7 (8),* 329-344.
4. Bose, S., & Bhanumurthy, N. R. (2013). Fiscal Multipliers for India. *National Institute of Public Finance and Policy Working Paper*.
5. Fan, S., Hazzel, P., & Thorat, S. (1999). *Linkages Between Government Spending, Growth and Poverty in Rural India.* Washington Dc: International Food Policy Research Institute.
6. Government of India. (2022). *Key Features of e Budget 2022-2023.* New Delhi: Ministry of Finance.
7. Iimi, A., Lancelot, E. R., Manelici, I., & Ogita, S. (2015). Social and Economic Impacts of Rural Road Improvements in the State of Tocantins, Brazil. *Policy Research Working Paper 7249. The World Bank*.
8. Manjunath, K. C. (2012). PMGSY And Rural Roads Development in India: Economic,Financial and Maintenance issues. *Indian Journal of Applied Research , 1 (5)*, 84-86.
9. Sarkar, A. K. (2007). *Impact of PMGSY Roads on the Traffic Safety of School-Going Children in Rural Areas.* International Forum for Rural Transport and Development.
10. Sengupta, R., Coondoo, D., & Rout, B. (2016). Socio-economic Well-being—Impact of Wider Highways on the Rural Poor Living in Proximity. *Journal of Development Policy and Practice* , 1 (2), 222-264.
11. Van de Walle, D., & Cratty, D. (2002). *Impact evaluation of a rural road rehabilitation project*. Washington DC: World Bank.

(The author is Assistant Professor, Chandragupt Institute of Management, Patna. Views expressed are personal. Email: debabrata@cimp.ac.in)

Railway Connectivity

Dr. Amiya Kumar Mohapatra
Dr. Pradeepta Kumar Samanta

Indian Railways has undergone tremendous changes in terms of digitisation and innovation. The recent initiatives taken up by Indian Railways not only will reduce the cost of transportation in terms of time and money but also will act as a catalyst for regional and balanced growth. It contributes directly and indirectly to various sectors with its positive externalities. For its multi-faceted and multi-dimensional contribution, it is considered as *'Lifeline of India'* and helps in enhancing people's capabilities, choices and quality of life.

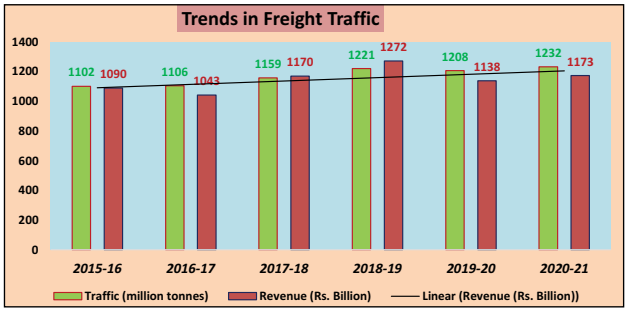
Improved infrastructure always has a positive correlation with economic development. It is observed that one percent increase in stock of infrastructure is associated with one percent increase in Gross Domestic Product (Summers and Heston, 1991) with remarkable multiplier effect. Adequate and accessible infrastructure especially in the transportation sector not only enriches the quality of life but also raises the efficiency in transportation and lowers down the production cost and also directly supports other economic activities and livelihoods. Transport infrastructure has tremendous impact on various economic activities and helps in attainment of regional and balanced development. Especially 'Railway Infrastructure' is considered as an important contributing factor for regional, social, economic development of a country like India. It helps in the creation of employment, enhances connectivity, improves accessibility, increases production, facilitates trade and commerce and is overall considered as an engine of progress and a great source of national integration.

Growth and Trends in Indian Railways

Indian Railways has witnessed a paradigm shift in its focus towards new technologies, customer service enhancement, efficient passenger operations and better freight services. It is currently on the path of transformation to make the sector future-ready. Railway provides various services for goods and passenger transportation. It was recorded that in FY 19-20 about 13,169 passenger and 8,479 goods trains were operated daily. The increasing urbanisation and higher standard of living are driving the growth in the passenger segment; on other hand freight traffic has increased substantially due to growing industrialisation in the last decade. It is projected that by 2050, India will account for 40 percent of the global share of rail activity and hence would need an investment of Rs. 50 lakh crore (by 2030) in the railway infrastructure development.

Rising market demand and faster industrialisation set the demand for freight and hence this segment became a viable and profitable option for higher investment including private sector participation. Government has opened up for PPP beyond the supporting roles of the private sector. PPP is being applied in the areas such as redevelopment of stations, building private freight terminals and private container train operations, etc. For Indian Railways, freight remains the major source of revenue which accounted for around 65 percent of the total revenue generated in FY 20 whereas 35 percent are accounted for from passenger segment. In freight traffic, Indian Railways plans to achieve 2024 MT (million tonnes) of loading in 2024 from the current level of 1200-1300 MT. Freight traffic in millions and revenue in Rs. in billion in the last six years are depicted in Figure 1.

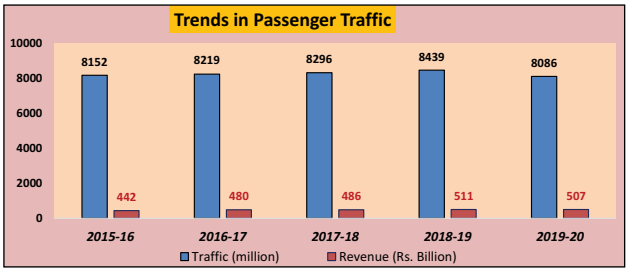
Figure 1: Trends in Freight Traffic



Source: Ministry of Railways

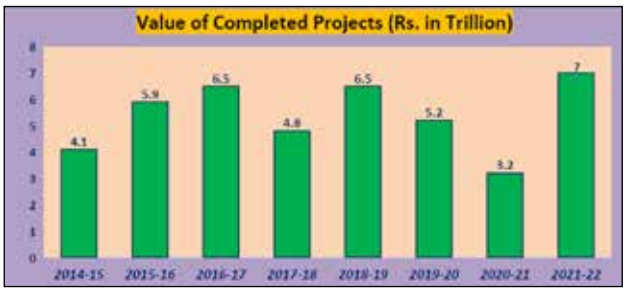
During FY20, the passenger traffic in the country reached 8,086 million and further it is estimated that it will reach 12 billion by 2031 (Fig. 2). Similarly the value of completed projects reached to about Rs. 7 trillion in 2021-22 as compared to Rs. 3.2 trillion in 2020-21.

Figure 2: Trends in Passenger Traffic



Source: Ministry of Railways

Figure 3: Value of Completed Projects



Source: CMIE, Note: 2021-22 is projected completions

Table 1: Capex for Railways (6 Years)

Year	FY 2018 (Actual)	FY 2019 (Actual)	FY 2020 (Actual)	FY 2021 (Actual)	FY 2022 (RE)	FY 2023 (BE)
Budgetary Capex (Rs.Billion)	434	528	678	1093	1171	1371

Source: Budget Documents

The central government has allocated the highest-ever capital expenditure of Rs. 2.45 trillion for 2022-23 which is 14 percent higher than the Revised Estimate of Rs. 2.15 trillion of 2021-22. The capital expenditure (capex) for Railways has also increased significantly from FY 2018 to FY 2023 (Table 1). The Economic Survey 2021-22 has stated that in the next 10 years, Indian Railways will see a massive capital expenditure under the National Rail Plan for capacity expansion of the rail network by 2030. It will ensure the creation of a future-ready railway system which will be able to meet the passenger demand as well as increase the modal share of railways in freight.

Dedicated Freight Corridor

The dedicated freight corridor (DFC) project is one of the most ambitious projects undertaken by Indian Railways. It is being developed along the Golden Quadrilateral (GQ) to link the four metropolitan cities of Delhi, Mumbai, Chennai and Kolkata, and the two diagonals of the quadrilateral they form (Delhi-Chennai and Mumbai-Kolkata). Presently, the GQ accounts for about 16 percent of total route length, carrying over 58 percent of its freight traffic and 52 percent of its passenger traffic. This causes excessive traffic congestion and increase in waiting time. So as to address these issues, the western and eastern DFCs are being developed in the busiest routes of the country. These projects aim to increase the rail share in the freight segment by providing customised logistics services, creating additional rail infrastructure to cater to high levels of transport demand, and introducing time tabled freight trains and guaranteed transit times. It also targets the introduction of high-end technology enabled freight services, segregation of freight infrastructure for a focused approach on both the passenger and freight businesses, and reduction in the cost of transportation by speeding up freight train operations and by boosting productivity.

As per revised figures, the total estimated investment required for the project is Rs. 1,240.05 billion. Of this, Rs. 218.46 billion is the land cost and Rs. 1,021.59 billion is the hard and soft cost. The project has achieved financial progress of 78 percent as on October 2021, with cumulative capex of the project is Rs. 806.2 billion. The World Bank has funded Rs. 124.53 billion for the eastern DFC, while the Japan International Cooperation Agency

has provided Rs. 387.22 billion for the western DFC. During 2021-22 (till November 2021), 466 km and 266 km of track linking and overhead equipment works, respectively, were completed. In addition to it, 329 (out of 540) major bridges, 1,149 (out of 1590) road under bridges and 113 (out of 304) road over bridges have also been completed. All contracts for both the eastern DFC and the western DFC, worth Rs. 574.41 billion, have been awarded.

Table 2: New Proposed DFCs

New Proposed DFCs	In Km
Eastern DFC (Dankuni in West Bengal to Khurja in Uttar Pradesh & Ludhiana, Khurja and Dadri)	1875
Western DFC (Jawaharlal Nehru Port Trust in Mumbai to Dadri)	1504
East Coast Corridor (Kharagpur to Vijayawada)	1115
East-West Sub-Corridor (Bhusaval to Dakuni & Rajkharasawan to Andal)	1673 + 195
North-South Sub-Corridor (Vijayawada to Itarsi)	975

Source: Indian Infrastructure, August 2021

Looking at the enormous opportunities and benefits, additional dedicated freight and high speed lines are also being planned (Table 2 and 3). These routes are freight-intensive and have high iron ore, coal, cement and steel traffic. This will help to decongest the train network and will lower the logistics costs. The east-coast corridor is expected to entail an investment of Rs. 405.44 billion, while the east west sub-corridor will cost nearly Rs. 868.05 billion. Also, the north-south sub-corridor will require an investment to the tune of Rs. 895.79 billion.

Table 3: New Proposed High Speed Rail Corridors (For Passengers)

Sector	Length
Delhi-Agra-Varanasi	865 km
Varanasi-Patna-Howrah	760 km
Delhi-Jaipur-Ahmedabad	886 km
Delhi-Chandigarh-Amritsar	459 km
Mumbai-Nashik-Nagpur	753 km
Mumbai-Pune-Hyderabad	711 km
Chennai-Bengaluru-Mysore	435 km

Source: Union Budget 2021-22

PM Gati Shakti and Railways

PM Gati Shakti is a transformative approach driven by seven engines, namely, Roads, Railways, Ports, Airports, Waterways, Mass Transport and Logistics Infrastructure to spur economic growth and sustainable development. It will help in developing world-class modern infrastructure and logistics which will bring synergy by providing multi-modal integrated and seamless connectivity for movement of people, goods and services. Moreover, it is designed to generate various employment opportunities, cut-down on logistics cost, improve supply chains and make local goods globally competitive. In the Union Budget 2022-23, some of the new announcements were made to give a further fillip to the Indian Railways. As a part of 'Atma Nirbhar Bharat', 2,000 km of rail network will be brought under 'Kavach', which is an indigenously developed anti-collision system with world-class technology to prevent accidents. Kavach will help railways to achieve its goal of zero accidents. In the next 3 years, Indian Railways will introduce 400 new-generation and high energy efficient 'Vande Bharat' high speed trains with focus to add value to passenger riding experience.

AatmaNirbhar Bharat Initiative

After the 'Aatma Nirbhar Bharat' initiative introduced by the Government of India, the imports in the procurement of railway equipment dropped from 5.6 percent in 2013-14 to 1.5 percent in 2020-21. Electric locomotive production in the country increased from 250 in 2014 to 700 in 2020. Further, more than 97 percent of the equipment required for the production of electric locomotives is being sourced domestically. The Indian Railway has also started manufacturing smart coaches, which provide additional features like announcements, information on trains approaching different stations and air-conditioning and temperature control, etc. In 2022-23, Indian Railway plans to manufacture 8,429 train coaches and rakes including 75 Vande Bharat Express trains, 220 Tejas and 70 Vistadome coaches. Of the

70 Vistadome coaches to be manufactured, 40 will be manufactured by the Integral Coach Factory (ICF) in Chennai and 30 by the Rail Coach Factory (RCF) in Kapurthala. Meanwhile, the ICF will have an ambitious target of manufacturing 55 Vande Bharat rakes, while the Modern Coach Factory in Raebareli and the RCF will aim to produce 10 rakes each.

Kisan Rail and Rural Upliftment

The commencement of 'Kisan Rail' is another important initiative to improve the freight business in general and provide a push to farmers in particular. Under this scheme, 157 trains are being operated on eight routes transporting more than 49,000 tonnes of commodities. Kisan Rail also provides a 50 percent subsidy in the freight segment. This will definitely help in maintaining the supply chain and ensuring the availability of essential items including the agricultural products. This connectivity would ensure that farmers have easy access to the market and get better prices for their produce as compared to the existing local area markets.

The concept of 'One Station, One Product' has been introduced to help the farmers, agri-entrepreneurs and local businesses and supply chains. Railways will develop new products and efficient logistics services for small farmers and MSMEs, besides taking the lead in integration of Postal and Railways networks to provide seamless solutions for movement of parcels. Multi-modal connectivity between mass urban transport and railway stations to be facilitated on priority basis. The Government has announced plans to develop one hundred PM Gati Shakti cargo terminals for multimodal logistics facilities in the next three years.

Green Fuel Initiatives

Indian Railways is aiming to achieve 100 percent electrification of railway lines by December 2023, thus reducing the carbon emission level and improving the functioning and system of transportation. This will make Indian Railway, the first major railway in the world to have a fully electrified broad gauge railway network of such a size. To achieve the stated target, it collaborated with the Central Organisation for Railway Electrification, Power Grid Corporation of India Limited, RITES Limited and the Indian Railway Construction Company. Once the goal is achieved, the national transporter will be able to save around Rs. 145 billion annually on the fuel bill. The 2013-14 annual budget permitted the electrification of only 610 route km (rkm). Since then, the annual targets have been continuously growing, and accomplished the maximum ever electrification of the network, totalling 6,015 rkm during financial year 2020-21, marking a 10-fold increase despite disruptions caused by the COVID-19 pandemic. As of March 31, 2021, the Railways had electrified 71 percent (45,881 rkm) of its total broad gauge network (64,689 rkm). It also commissioned a record 56 traction sub stations during 2020-21. Due to the increased pace of electrification, it has managed to cut down its diesel fuel expenditure by over Rs. 80 billion during 2020-21. Further, as more diesel locomotives were replaced with electric locomotives, the Railways lowered its diesel consumption from 3.06 billion litres in 2018-19 to 1.43 billion litres in 2020-21. With the adoption of LEDs, renewable energy, and open access in non-traction areas, Indian Railway expects to save Rs. 11 billion on an annual basis, in terms of its electricity expenditure. Further, a provision has been made for the use of energy efficient LED lights and only star-rated energy efficient equipment to be used in all railway installations, including railway stations, service buildings, residential quarters and coaches.

Indian Railway has adopted an environment-friendly technology called Head-on Generation (HOG) system for supplying power to passenger coaches, which eliminates the requirement for separate power cars in trains, thus cutting down energy costs significantly. Under the HOG system, power is now obtained from an overhead electric supply system, which previously used to be derived from power generator cars attached to the train's front and back portions. With the introduction of the HOG system, there has been a substantial amount of saving in terms of diesel fuel consumption of power cars. A total of 1,280 trains have been equipped with the HOG system, as of June 2021. As per Indian Railway's estimation, the adoption of HOG technology will prevent the release of 1,724.6 tonnes of carbon dioxide per annum.

Indian Railway has planned to source around 1,000 MW of solar power and 200 MW of wind power by 2021-22 across zonal railways and production units. It is progressing towards becoming the world's largest green railway network by 2030, with the target of becoming a net-zero carbon emitter. Indian Railway is gearing up to meet this target by expediting renewable energy initiatives, including setting up solar plants and wind projects on unutilised railway land on a mega scale. Indian Railways aims to generate 20 GW of renewable energy from solar and wind energy projects to meet its annual power requirement of around 21 billion units. The Railway Ministry has commissioned solar panels at over 960 stations and is using solar energy to meet the energy requirements of the railway stations.

Station Infrastructure Redevelopment Programme

The Government of India has launched the station redevelopment programme, which aims to redevelop 400 railway stations across India for Rs. 1,000 billion under a public-private partnership (PPP) model. The programme will try to develop self-sustainable railway stations with high standards of safety, comfort, user-friendly passenger amenities, value-added services and efficiency by adopting the best technological practices. The station redevelopment programme is a major element of the Smart Cities Mission, which aims to reshape urban development and stimulate economic activity by offering opportunities for real estate development (hotels, eateries, multiplexes, shopping malls, office complexes, etc.), and development of multimodal transit hubs.

Work on the redevelopment of 125 stations is currently underway as part of this agenda. As of December 2021, there are 52 stations being developed, 44 projects are at the planning stage, five projects are in different phases of implementation, and three projects have been completed. In spite of the challenges posed by COVID-19 pandemic, the first true brownfield redevelopment projects Baiyappanahalli station was completed in September 2021, Rani Kamlapati (Habibganj) station was inaugurated in November 2021, and Gandhinagar station was inaugurated in July 2021. These are the first air-conditioned railway terminals in the country.

Digitisation Initiative

Implementation of digital infrastructure by Indian Railways is on full swing. As on July, 2021, the Wi-Fi facility has been provided at 6,045 railway stations. Other digital initiatives include the installation of internet-based video surveillance systems and IP-based CCTV surveillance cameras. To ensure quick detection of any technical defects during the train journey, an application called 'Overhead Equipment (OHE) Inspection' has been developed. The application has been rolled out on a pan-India basis with features such as GPS-based tracking of patrol men, real-time capturing of OHE defects, and provision for taking photographs.

Connecting the North-East and Mining Districts

Further, a major initiative has been undertaken to boost rail connectivity in the north-eastern region of the country as a part inclusive development. Under this initiative, the entire rail network of the north-eastern states is being converted to broad gauge. Meanwhile, major cities in Assam, Tripura and Arunachal Pradesh are being connected by rail. In addition, under its 'Mission Hungry for Cargo' initiative, the Railways is targeting a 45 percent modal share in freight transportation from the current 27 percent. The Railways is mapping the mining districts across the country to connect them with the rail network in a bid to bite into a bigger slice of the freight transportation pie. As part of it, zones have been instructed to identify districts and survey the total produce of the mines in their regions and map the rail route around them. So far, 52 districts have been identified by the Ministry and have approved the survey of about 100 MT of production capacity mines across the country. The products include coal, iron ore and bauxite limestone which the Railways want to transport at competitive pricing. The surveys will identify the nearest railhead to the mine and if there aren't any then Indian Railways can lay the tracks to connect the mines. The Railways plans to even fund these lines on its own so that there are no delays. This will make railways not only the cheapest but the most convenient transporter in this sector.

Conclusion

Inclusive growth, which is the need of the hour, in itself does not have automatic mechanisms to reach the deprived and hapless section of the society; rather it is the result of a focused course of actions of the government. In this regard, contribution of railways is very essential today and also in the days to come. Indian Railways has undergone tremendous changes in terms of digitisation and innovation. The recent initiatives taken up by Indian Railways not only will reduce the cost of transportation in terms of time and money but also will act as a catalyst for regional and balanced growth. It contributes directly and indirectly to various activity sectors with its positive externalities. According to the National Rail Plan, Vision 2024, the Indian Railways has to accelerate implementation of critical projects, such as multi-track congested routes, achieve 100 percent electrification, 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. The enhanced CAPEX, coupled with the National Infrastructure Pipeline and the PM Gati Shakti National Master Plan will be the cornerstone of India's infrastructure development and will act as a booster for faster economic growth in achieving India's goal of becoming a five trillion dollar economy by 2025. In the ambitious blueprint of the government to steer the Indian economy for the next 25 years' development, Indian Railways will eventually play a vital role. For its multi-faceted and multi-dimensional contribution, it is considered as 'Lifeline of India' and will help in enhancing people's capabilities, choices and quality of life. Nevertheless, seeing the success story in the recent years, we look forward to having more such schemes and positive outcomes through effective leadership, good governance, and timely execution with apt follow up of the various railways development projects in India.

(The authors are Deputy Director, FOSTIIMA Business School, New Delhi; and Sr. Associate Professor, National Institute of Construction Management and Research, Pune. Views expressed are personal. Email: amiyacademics@gmail.com.)

Transforming Rural Connectivity

Partha Pratim Sahu

Improved rural connectivity (e.g. roads, phones, internet, and social media) greatly contributes to the creation of an enabling environment for local communities that stimulates entrepreneurship like starting or expanding the existing local businesses. It ensures that local communities get more reliable and quicker access to outside products, services, information, and social linkages.

Rural connectivity (both physical and digital) was a development priority for India even before the COVID-19 pandemic but now it is indispensable. However, rural connectivity is a necessary but not a sufficient prerequisite for inclusive and sustainable rural development. Better rural connectivity provides an enabling environment for improvement in livelihoods, employment, education and healthcare. Since independence, India has made tremendous progress in improving rural connectivity with huge investment on rural infrastructure and a series of flagship schemes and programmes like Pradhan Mantri Gram Sadak Yojana (PMGSY), BharatNet initiative and so on. But still some parts of the country such as hilly areas, conflict prone areas and tribal concentrated pockets don't have an all-weather road connection and other crucial infrastructural facilities, which deprive them from benefits of the country's economic growth. During the various phases of lockdown due to COVID-19, we have witnessed severe erratic digital connectivity issues, which led to widening of digital divides, learning losses, difficult and delayed school-to-work transition, in addition to livelihood and health challenges.

Impact on Livelihoods

Improved rural connectivity (e.g. roads, phones, internet, and social media) greatly contributes to the creation of an enabling environment for local communities that stimulates entrepreneurship like starting or expanding the existing local businesses. It ensures that local communities get more reliable and quicker access to outside products, services, information, and social linkages. It also enabled communities to fully access existing government schemes, programmes and services. During the pandemic, we witnessed high incidence of reverse migration, i.e. rural people working in urban locales chose to return to their villages and small towns of origin due to lockdowns or mandated closures. It is an opportune time to focus more on improving connectivity including increasing investments in digital infrastructure, which will not only unlock opportunities for these people but also help decongest overcrowded cities and towns. Rural youth unemployment is a huge challenge which can be addressed by improving the rural connectivity. Access to good quality rural infrastructure (including internet) is a crucial factor for rural youth in deciding whether to stay or leave their villages.

Rural youth are crucial for the future of agriculture. Rapid transition from subsistence to commercial agriculture can only be achieved by youth, accompanied by increased connectivity. Better rural connectivity with good quality infrastructural facilities will also open opportunities of rural tourism and homestay enterprises.

Rural connectivity programme requires a robust service enterprise framework with public and private stakeholders at the very core. There is a need to create a vibrant 4P model i.e. Public-Private-Panchayat Partnerships for inclusive and sustainable rural development through rural connectivity.

Micro and small enterprises including SHGs have emerged as important change agents in the rural development landscape. Digital skills have helped rural women become self-reliant during the pandemic. There are many small but significant initiatives undertaken in recent past which should be documented and replicated in different sites with necessary customisation. For instance, a cadre of Community Resource Persons such Bank *Mitras* (Bank Correspondents), Tablet *Didis* are providing a bouquet of services at the doorstep of BPL families and keeping all the financial activities of SHGs on Management Information Systems (MIS) software respectively. Apart from bookkeeping, Tablet *Didis* show short films on their tablets to families to create awareness about various livelihood avenues, animal husbandry and also on social ills such as child labour, witch hunting, and domestic violence. Another additional but hidden benefit to the children and other family members of these Tablet *Didis* is that they are also becoming familiar with computer applications and becoming digitally literate. Many other good practices have been initiated under Aspirational District Programme for livelihood, skill and health related issues. (See Box 1)

The Leelavati Project seeks to improve the digital and financial literacy of at least 5,00,000 women members across six Indian states, i.e. Gujarat, Rajasthan, Uttar Pradesh, Bihar, Meghalaya and Assam, which is supported by the Japan Social Development Fund (JSDF) and managed by the World Bank. The Self-Employed Women's Association (SEWA) under this project train women weavers in Gujarat's Anand district and help them to showcase their products online, create WhatsApp groups of customers, and enable digital payments for purchases. The training has helped other crafts persons in setting up their retail through Facebook and Instagram. Women have also become financially independent and carry out basic online transactions through Paytm, the BHIM App, Google pay, etc. In addition to financial inclusion, many women are feeling more empowered and self-confident to speak out at Panchayats or Gram *Sabhas*. Through the Leelavati project attempts have been made to open up new livelihood opportunities for poor rural women, promote women-led entrepreneurship and enhance their participation in the workforce. So, an inclusive rural connectivity programme can bring transformative changes both in economic and social arena. Better connectivity and its accessibility play a crucial role for small and micro enterprises which operate at the bottom end of the value chain system. It should also be recognised that rural connectivity has two distinct dimensions, i.e. youth, gender.

Box 1- Significant Practices Carried out Under Aspirational District Programme	
1.	Promoting local products through e-commerce portal - Goalpara district (Assam)
2.	Providing skill development and community outreach through the YUVA BPO - Dantewada district (Chhattisgarh)
3.	Model Anganwadis for holistic child development (including mobile science laboratory, digital literacy workshops) - West Singhbhum district (Jharkhand)
4.	Engagement of community members to improve financial inclusion - Ranchi district (Jharkhand)
5.	Utilisation of green technologies for better connectivity, Recycling the waste of single-use plastic to build roads - Goalpara district (Assam)
Aspirational Districts Programme: An Appraisal, UNDP, 2020	

Engaging Local Institutions

Rural connectivity programme requires a robust service enterprise framework with public and private stakeholders at the very core. There is a need to create a vibrant 4P model i.e. Public-Private-Panchayat Partnerships for inclusive and sustainable rural development through rural connectivity. With narrow and lop sided visions of the existing extension services, local institutions, such as Panchayats with support from other stakeholders operating in the rural landscape, can play the dual role: (a) regular and continuous engagement with extension agencies in the context of local planning to promote convergence of development activities at the local level and (b) monitoring of services delivery by these extension agencies. For instance, by installing a computer in the Panchayat office or any community centre, it can help connecting small and micro entrepreneurs, including SHGs with various government schemes and programmes and also help them to get access to support measures available on IT enabled portals or websites.

There are many sustainable and community-led models for rural connectivity in India and in other developing and developed nations [see Luca Belli and Senka Hadzic (Eds.) (2021)]. Gram Marg (A road map to rural connectivity) is one such innovative model which aims to empower rural India digitally by bringing in Internet connectivity at affordable rates. Although under the BharatNet initiative, attempts have been made at digitally connecting 2,50,000 Gram Panchayats, there is huge gap in internet penetration which needs to be filled. So, in order to make connectivity sustainable in rural India, there is a need to develop a suitable partnership model with active participation of local institutions. The proposed 4P model have been implemented and validated on the ground, i.e. in the villages in the Palghar district of Maharashtra, where internet connectivity has been enabled by *Gram Marg*. In this model, the participation of community is important in maintenance of the network and safety of the devices. A village youth is nominated as the Village Level Entrepreneur (VLE) who undergoes training and skill development to maintain and operate the network in the village. The VLE is registered with the government's Common Service Centre (CSC) programme to ensure that citizen service centres operate in all Gram Panchayat offices in India. The role of each partner has been clearly defined in the model, including a revenue generation model enabling the internet to thrive and grow sustainably. [Sarbani Belur, *et.al.* (2021)]. The Gram Panchayat Development Plan (GPDP) could be an effective tool to mainstream rural connectivity issues including funding internet connectivity in villages. Such innovative models may be examined in greater details and possibility may be explored to replicate so as to expand the internet to penetrate rural areas.

Availability of adequate funding, training and capacity development are concerns for robust and inclusive rural connectivity programme. These include the necessity of a comprehensive programme of public investment in (i) rural basic infrastructure, including improved road connection and 100 percent electrification; (ii) development of rural human capital, ensuring adequate opportunities for education, healthcare and cultural development; and (iii) ensuring Internet connection, providing rural populations equal opportunities to make use of the new technologies that depend on digital platforms.

India has made great progress in building the backbone infrastructure to enable connectivity in rural and remote areas. But there are still pockets largely unconnected without appropriate last-mile connectivity solutions, partly due to lack of investment. In order to promote connectivity in rural areas, governments can ease regulatory requirements for alternative business models such as community networks, PPP models; create a more enabling environment for investment in underserved areas through incentives such as tax breaks, Corporate Social responsibility (CSR) and crowd funding, etc. Infrastructure investment in physical or digital connections, in the form of roads and digital networks, will expand the reach of technologies into more remote and rural areas. In addition, the government should accelerate its investments in expanding access to electricity, lowering Internet costs, providing education and digital literacy, and implementing regulatory changes to encourage new digital ventures and services [UN DESA, 2021].

Robust rural connectivity will play a crucial

role in the MoPR's new Rural Area Development Plan Formulation and Implementation Guideline (2018), which aims at planned spatial development for overall integrated development of villages. Rural connectivity needs to be understood from the perspective of the most vulnerable people in the rural areas. Speeding up the process of a robust and inclusive rural connectivity programme for producing major innovations in multiple areas, such as livelihood, education, health and the environment, is indispensable for attaining Vision India @ 2047.

References

1. Luca Belli and Senka Hadzic (Eds.) (2021): *Community Networks: Towards Sustainable Funding Models*, Official Outcome of the IGF Dynamic Coalition on Community Connectivity. Presented at the United Nations Internet Governance Forum. Katowice, Poland, December 2021.
2. Mehnaz Safavian, Tushar Arora and KarthikLaxman (2021): "India: Rural women go digital to manage the pandemic's disruptions", Published on End Poverty in South Asia.
3. Ministry of Panchayati Raj (2018): Rural Area Development Plan Formulation and Implementation (RADPFI) Guidelines, 2017, MoPR, Govt. of India.
4. Sarbani Banerjee Belur, Abhishek Raj and Ritu Srivastava (2021) Gram Panchayat Development Plan (GPDP): An Opportunity for Funding Rural Internet Connectivity in India" in Luca Belli and SenkaHadzic (Eds.) (2021).
5. UNDP (2020), Aspirational Districts Programme: An Appraisal, UNDP.
6. UN DESA (2021): World Social Report 2021: Reconsidering Rural Development, United Nations Department of Economic and Social Affairs (UN DESA).

(The author is Associate Professor, Centre for Entrepreneurship Development and Financial Inclusion (CEDFI) and Head-in-charge, Centre for Good Governance and Policy Analysis (CGGPA), National Institute of Rural Development and Panchayati Raj (NIRDPR), Hyderabad, India. Views expressed are personal. Email: ppsahu.nird@gov.in)

Rural Youth- Shaping New India

Tripti Nath

The entrepreneurial ecosystem in rural areas of India has significantly improved. With more than 50,000 start-ups, India has the third-largest start up ecosystem in the world. There are about 450 agri start-ups. Hailing the contribution of the youth to these start-ups in January end, Prime Minister Shri Narendra Modi acknowledged "India's youth has taken the nation to the top- three in the world in terms of creating start-ups."

India's demographic dividend has often found a mention in Prime Minister Shri Narendra Modi's speeches in India and abroad. Youth constitute the majority share in India's population. This explains why the Prime Minister makes it a point to draw the attention of world leaders to power of India's youth.

"India considers its youth a demographic dividend as well as a development driver.'' said Shri Narendra Modi while inaugurating the 25th National Youth Festival in Puducherry via video conferencing on January 12, the birth anniversary of Swami Vivekananda.

"The Indian youth is a force to be reckoned within the unicorn ecosystem all over the world. Today, India has a strong ecosystem of more than 50,000 start-ups. Of these, more than 10,000 start-ups came up amidst the challenge of the pandemic,'' the Prime Minister noted with pride.

According to the report Youth in India 2017 (released by the Central Statistics Office), India is one of the youngest countries in the world. This puts our vast and diverse country in an enviable position. While most developing countries are facing the challenge of ageing population, India's demographic situation is very favourable.

The National Youth Policy (NYP) 2014 defined youth as those in the 15–29 age group but the 2017 Youth in India report defines the age group of 15–34 years as the youth.

To tap this demographic dividend to optimum use, the government has to ensure that the youth have appropriate education and skills. It was on July 15, 2015 that the Prime Minister launched the Skill India Mission to empower the youth of the country with skill sets and make them more employable. Skill India offers courses across 40 sectors that are aligned to the standards recognised by the industry and the government under the National Skill Qualification Framework. More than one crore youth join the Skill India mission every year.

The Pradhan Mantri Kaushal Kendra (PMKK) is an initiative of the Ministry of Skill Development and Entrepreneurship. Such state-of-the-art training centres have been set up in almost every district of the country for imparting skill development training. The objective of setting up the PMKKs is to help a large number of Indian youth take up industry-relevant skill training that would help them in securing a better livelihood. Launching through virtual mode, the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 3.0 in January 2021 in nearly 600 districts making 300+ skill courses available to the youth, the then Minister of Skill Development & Entrepreneurship, Mr Mahendra Nath Pandey said, “PMKVY 3.0 will take skilling to the remotest of villages and towns in India; States and Districts will have an increased responsibility’’.

The PMKVY aims to create skilled and certified workforce that could contribute not only to India’s growth but help it in becoming the global skills capital. India skill Report, 2018 highlighted that these is a clear, structural shift from agriculture to non-farm sector, particularly construction, trade and transport. According to the report, rapid advances in automation technologies are affecting India’s information technology and business process outsourcing sectors. These sectors have remained net job creators.

What is really encouraging is that the entrepreneurial ecosystem in rural areas of India has significantly improved. With more than 50,000 start-ups, India has the third-largest start up ecosystem in the world. There are about 450 agri-start-ups. Hailing the contribution of the youth to these start-ups in January end, Prime Minister Modi acknowledged that "India's youth has taken the nation to the top- three in the world in terms of creating startups.’’

All initiatives under the Start Up India are inclusive and are implemented across States, cities, towns and rural areas. The Ministry of Skill Development and Entrepreneurship has taken several initiatives to mitigate the impact of COVID-19 pandemic on skill development training. These include special programmes for training reverse migrants under PMKVY (Pradhan Mantri Kaushal Vikas Yojana). This component has covered 116 districts of Assam, Bihar, Madhya Pradesh, Odisha, Rajasthan and Uttar Pradesh identified under Garib Kalyan Rozgar Abhiyan (GKRA) of Ministry of Rural Development. Till November 21 last year, 1.24 lakh migrants have been trained / oriented under this programme.

The Ministry of Rural Development is presently implementing three welfare schemes for employment generation. These schemes provide employment to people in rural areas including the youth belonging to scheduled castes/scheduled tribes and economically weaker sections.

The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is a demand driven wage employment programme. It provides enhancement of livelihood security to the households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in every financial year to every household whose adult members volunteer to do unskilled manual work.

The Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) is a placement linked skill development programme for rural youth under the National Rural Livelihoods Mission (NRLM). It was launched on September 25, 2014 on the occasion of 98th birth anniversary of Pandit Deendayal Upadhyaya. It aims to target youth, under the age group of 15–35 years. The motto of this scheme is to “Transform rural poor youth

into an economically independent and globally relevant workforce".

Another initiative of the Ministry of Rural Development under the National Rural Livelihoods Mission (NRLM) is skill development through Rural Self Employment and Training Institutes (RSETIs). The Ministry has decided to set up one such institute in each district of the country. A candidate opting for RSETI can take bank credit and start his/her own micro-enterprise or seek regular jobs. The RSETIs enable poor youth in rural India diversify household income.

While MGNREGS provides direct employment, DDU-GKY and RSETI schemes promote employability through either wage or self-employment leading to economic and social development of youth in rural areas of the country.

In a written reply in Rajya Sabha on February 9 this year, Union Minister of State for Rural Development, Mr Faggan Singh Kulaste said that 588 RSETIs are functioning across the country. These institutes are extending skill and entrepreneurship development training programmes to rural unemployed youth to facilitate them to employ themselves by commencing self-employment units/activities. This Ministry is reimbursing cost of training imparted by the RSETIs to the rural youth through the State Rural Livelihoods Missions (SRLMs).

RSETI has worked well as three-way partnership of the Ministry of Rural Development, state government and banks. As many as 39.9 lakh candidates have been trained under RSETIs in 64 courses. Of these, 28.11 lakh candidates were self-employed till January 2022.

The programme is currently being implemented in 28 States and 7 UTs and the RSETIs are sponsored by 23 leading banks. According to the Ministry of Rural Development, these banks are required to open at least one RSETI in their lead district to provide training to rural youth to take up self-employment/ entrepreneurship ventures. RSETI programme runs with an approach of short-term training and long-term handholding of entrepreneurs. Rural poor people between the age group of 18-45 years are eligible to join the training.

Under the RSETI scheme, 10 training courses are exclusively for women candidates. It is therefore not surprising that women form 66 percent of the total trained candidates under the RSETI programme. About 26.28 lakh women candidates have been trained and about 18.7 lakh have been successfully settled under the RSETI so far.

On the eve of International Women's Day on 8th March, new batches of women-centric courses were started by RSETIs (Rural Self Employment Training Institutes). The Ministry of Rural Development said that it launched fresh batches of women-centric courses as part of the iconic Week campaign under Azadi Ka Amrit Mahotsav. The event titled – Avsar Ki Azaadi– launched focused batches for women candidates. The batches introduced enrolment in trades like making incense sticks, making and selling soft toys, Papad, pickle and masala powder, beauty parlour management and costume jewellery.

RSETI programme runs with an approach of short-term training and long-term handholding of entrepreneurs. The RSETIs have become established as pioneers in capturing the aspirations of the rural poor youth and turning them into profitable entrepreneurs by training them in the domain and entrepreneurial skills.

Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY) seeks to place rural youth in wage employment across various sectors of the economy. DDU-GKY guidelines provide for earmarking 50 percent of the funds for those belonging to the Schedule Castes and Schedule Tribes and 15 percent for minorities. The scheme mandates that one-third of those trained must be women. Another positive aspect of this scheme is that there is an age relaxation for women. Women up to the age of 45 can avail of training under this scheme.

As part of the Azadi Ka Amrit Mahotsav, the Department of Rural Development (DoRD)

organised more than 174 'women centric' mobilisation camps under DDU-GKY across the country on March 7, 2022. The event titled- Avsar Ki Azadi- was organised through various State Rural Livelihood Missions (SRLMs), State Skills Missions (SSM) and Project Implementation Agencies (PIAs) to make it a grand success. Over 4,281 women candidates were successfully mobilised through various such camps organised across the country for enrolling in courses like assistant beauty therapist, self-employed tailoring and sample tailoring among others.

DDU-GKY has helped youth from poor rural families in accessing free of cost skilling programme. The programme is being implemented in 27 states and three Union Territories. More than 871 PIAs are training rural poor youth in close to 611 job roles through more than 2,381 training centres. Cumulatively, 11.44 lakh youth have been trained and 7.15 lakh youth have been placed till January 31, 2022. The programme has delivered satisfactory outcomes in north-eastern states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

In December 2021, the Ministry of Rural Development organised 285 job fairs across the country under DDU-GKY as part of Azadi ka Amrit Mahotsav. Industry leaders from across 30 major sectors participated in these fairs spread over seven days. Facilitated by various State Rural Livelihood Missions (SRLM) and PIAs, these job fairs drew huge crowds and provided rural youth many good job opportunities. Some of the participating companies were Amazon India, Swiggy, Med Plus, Axis Bank, Kia Motors, Innovsource, Flipkart, Nana Bharat Fertilizers, Reliance Trends, Westside, Spencers, Leela Hotel, JW Mariott, Bengaluru and Teamlease Services.

The participating organisations belonged to 30 major sectors/trades including retail, construction, pharmaceutical, manufacturing, e-commerce, microfinance, manpower management, IT-ITEs, automobile, etc.

On March 10 this year, the Union Rural Development Secretary, Mr Nagendra Nath

Sinha chaired a webinar promoting the 'Captive Employer' initiative under the DDU-GKY. More than 16 Sector Skill Councils and 180 stakeholders participated in the webinar. 'Captive Employer', is a first of its kind initiative aimed at addressing the vision of a dynamic and demand-based skilling ecosystem catering to the requirements of industry partners assuring sustainable placements for rural poor youth. The initiative assures post-training placement of candidates for a minimum of six months with a minimum CTC (Cost to Company) of Rs. 10,000/-.

The model will allow the industry to source trainees as per their requirement with active support from States/UTs and will also allow employers to select rural youth and employ them in one of their establishments/subsidiaries.

A Request for Expression of Interest (REoI) was floated on February 1, 2022, to empanel such 'Captive Employers' and the first Pre-proposal meeting was chaired on February 21 by Joint Secretary (Rural Skills), Ministry of Rural Development (MoRD). Over 125 prospective employers attended the pre-proposal meeting.

The sky is the limit when it comes to schemes to empower the rural youth. The Ministry of Agriculture and Farmers' Welfare has operationalised skill training (min 200 hrs.) to impart training to rural youth and farmers. This was done following the Gazette Notification issued by Ministry of Skill Development and Entrepreneurship in July, 2015. These courses are conducted through National Training Institutes, State Level Training Institutes, Krishi Vigyan Kendras and State Agricultural Universities. The skill trainings are imparted on the Qualification Packs developed by Agriculture Skill Council of India (ASCI) in agriculture and allied areas in compliance with the National Skill Qualification Framework. The major areas of skill trainings include mushroom production, bee-keeping, micro-irrigation, maintenance and repair of farm equipment, nursery management, vermicompost production, animal husbandry, dairying, poultry, fishery among others.

According to the Ministry of Agriculture and Farmers' Welfare, the 'Skill Training of Rural Youth' (STRY) of 'Sub Mission on Agriculture Extension' (SMAE) is being implemented since 2015-16. Short term skill training of seven days (15 trainees per batch) is imparted to rural youth and farmers on specific vocational areas in agriculture and allied areas through public and private/non government training institutes including Krishi Vigyan Kendras and State Agricultural Universities.

Recognising the competitive nature of the job market and expectations of employers, the government launched DigiSaksham - a digital skills programme, on September 30, 2021. Launched by Minister for Labour and Employment, Shri Bhupender Yadav, the skills programme is aimed at enhancing the employability of youth by imparting digital skills required in an increasingly technology driven era. This joint initiative with Microsoft India is an extension of the government's ongoing programmes to support the youth from rural and semi-urban areas. The DigiSaksham initiative will equip more than 3,00,000 youth in technical skills in the first year and will enable jobseekers access Microsoft learning resources such as programming languages, data analytics, software development fundamentals and advanced digital productivity on the National Career Service (NCS) Portal. The initiative gives priority to job-seekers from semi-urban areas who belong to disadvantaged communities and those who have been displaced or lost jobs due to COVID-19.

Lastly, the Government of India is running several schemes to increase participation of the rural youth in sports. The Khelo India Scheme implemented by the Ministry of Youth Affairs and Sports promotes sports among entire population including rural youth. The scheme has a dedicated vertical for promotion of rural and indigenous/ tribal games by providing financial assistance to National Sports Federations/ Non Government Organizations (NGOs), etc for promotion of sports in the country.

(The author is a senior Delhi based journalist. Views expressed are personal. Email tripnath@outlook.com)

Digital Technologies for Development

Bhakti Jain

Women Empowerment can be a significant driver of macroeconomic growth and stability in the present and the future. This goal cannot be achieved without the progress of information and communication technologies. Women, who are fundamental participants and critical players in all decision-making processes, have tremendous potential because of this advancement. To accomplish this, we must include a gender equality viewpoint in all aspects of our work and effectively use digitalisation. Men and women should be given equal opportunity in high-tech education and training. We should collaborate to eliminate gender barriers in all sectors and promote equal opportunities in ICT-related enterprises, among other things.

The digital revolution has enormous potential to improve social and economic outcomes, increase productivity and well-being of population worldwide, among other things. While several major research programmes, interventions, and policies have been implemented to advance women's empowerment and gender equality as part of this revolution, a considerable digital gender gap still exists in developing nations, as quoted by United Nations Women, preventing women from equally benefiting from the transition. Additionally, "A gender digital divide persists irrespective of a country's overall ICT (information and communication technology) access levels, economic performance, income levels, or geographic location," according to an analysis by the EQUALS Research Group, which is led by the United Nations University (UNU). As a result, women are underrepresented in the digital revolution in high-, low-, and middle-income nations, even though greater equality is possible.

To close the digital gender gap and reap the benefits of the digital revolution, existing efforts need to be augmented to pay more attention to the social, political, and economic factors that influence the development, design, and use of digital technologies, including emerging data-driven technologies such as artificial intelligence (AI) and machine learning.

Empowerment has a positive impact on daily lives of women, but it is also essential for the significant growth of any society. Women in India and worldwide have significantly benefited from the rapid changes in the workplace and information technology, as discussed in this article.

Digital Technologies and Women Empowerment

Numerous changes have taken place in the way people communicate, conduct business, and connect because of information and communication technologies (ICTs). Job opportunities in the ICT sector are plentiful, and they include a variety of challenging occupations of various types. Although intellectual resources are valued more highly than physical resources in the industry, this industry is non-discriminatory. Using ICTs, men and women, minorities, and disabled individuals have received equal work prospects. Digitalisation can advance gender equality and women empowerment by providing women with opportunities to find and share information, access health and educational services, generate income and collaborate with others while also having the ability to have their voices heard.

- **Educational Empowerment**: Every country is taking advantage of new technologies to assist and increase training for women and girls in education. This includes using computers, the Internet and broadcast media such as radio and television. Even though there are still many gender inequalities in education due to conventional domestic life, lack of mobility, and socio-cultural ways of thinking that downplay the importance of women's education, ICTs will be advantageous in promoting women's participation around the world.
- **Health Empowerment:** Women's health programmes at the global, regional, and national levels stand to benefit significantly from information and communications technologies. Health promoters in developing nations, such as India, have employed electronic gadgets to broadcast the public's health-related information on sexual and reproductive rights. ICTs offer the ability to deliver locally adapted health information to women through community access points.
- **Political Empowerment:** Worldwide, people are utilising ICTs in novel ways for networking and political activities. Women and their organisations have strategically employed ICTs to advance their rights. Women's networks are leveraging new technology to amplify marginalised women's voices. The advent of ICTs encouraged the formation of alternative organisations and non-governmental organisations (NGOs) to address topics that are not effectively addressed by traditional media. The Internet has elevated women's perspectives to the forefront of public discourse, with various venues devoted exclusively to women. ICTs can assist in strengthening women's networks for social and political activism, expanding women's engagement in the political process, assisting women officials in their work, and increasing women's access to government and its services.
- **Economic Empowerment:** ICTs contribute to women's economic empowerment by providing chances for women to own and operate ICT projects. Additionally, digitalisation enables women to work remotely from their homes while caring for their families. Further, ICTs foster an environment conducive to women participating in activities and initiatives to defend their demands and advance their goals. ICTs also provide economic opportunities in terms of finance and financial decision-making. Digital financial services enable financial inclusion by bridging the gender divide in account ownership and increasing formal financial activities in terms of both volume and value of transactions. Digitisation has the potential to create an enabling environment for women's financial products and services to be transparent, inexpensive, accessible, and qualified.

Direct Benefits Transfers (DBT)

With the Direct Benefit Transfer (DBT) programme, the government is reengineering current delivery processes to ensure better and more timely delivery of benefits through ICT. Benefits are transferred into accurately targeted beneficiaries' bank and postal accounts, preferably seeded with Aadhaar. The programme also supports in-kind transfers from the government to individual beneficiaries. To simplify and expedite the flow of information and cash while reducing fraud, the DBT was established.

DBT is being used to implement 310 schemes from 54 different ministries and departments. As a result of this procedure, centrally funded initiatives are implemented through state governments, with granular level information being kept by the respective state governments. When the initial phase of DBT was implemented in 43 districts, a subsequent expansion to 78 more districts was made possible by 27 schemes dealing with scholarships, women's, children's, and labour welfare.

Through DBT and other governance reforms, the government has been able to eliminate duplicate/fake beneficiaries and plug leakages, among other things, allowing it to focus on the genuine and deserving beneficiaries instead. The DBT has improved the government system's efficiency, effectiveness, transparency, and accountability and instilled citizens' confidence in governance. To accomplish the objective of Maximum Governance, Minimum Government, current technology and information technology

instruments are utilised. In the government's view, DBT is a high-priority and high-focus area.

DBT Government Schemes

- **Anganwadi Services - Honorarium to Anganwadi Workers (AWW) and Anganwadi Helper (AWH):** AWWs at main Anganwadi Centres (AWCs) currently receive an honorarium of Rs. 4,500 per month; AWWs at mini-AWCs receive an honorarium of Rs. 3,500 per month, and AWH receive an honorarium of Rs. 2,250 per month. Improved working conditions for Anganwadi workers have been made possible by revised joint guidelines issued by the Ministry of Women and Child Development, the Ministry of Rural Development, and the Panchayati Raj for the construction of 4 lakh AWC buildings across the country as part of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in collaboration with Anganwadi Services (ICDS Scheme). Grants are available under the Swachhta Action Plan for drinking water facilities and toilet facilities, as determined by the AWC, among other things. The purchase of water filters, furniture, and other equipment is also eligible for grant funding if requested in advance. The AWWs have also received smart phones, which will allow them to provide more efficient service.
- **Supplementary Nutrition Programme:** The Supplementary Nutrition Programme is being run by the Ministry of Women and Child Development to improve women and children's nutritional status. It is part of the Integrated Child Development Services (ICDS) programme, which is meant to help pregnant women, lactating mothers, and out-of-school adolescent girls who are not in school get the food they need (11-14 years). The Poshan Tracker is a mobile application launched by the Ministry as a critical governance tool. Poshan Tracker's technology identifies stunting, wasting dynamically, and underweight prevalence among youngsters and tracks nutrition programme delivery down to the last mile.
- **Scheme for Adolescent Girls (AGs):** The fundamental objective of the project is to aid, educate, and empower AGs. Aims of the initiative include the following, among other things.
  - Students who have dropped out of school are assisted in making a smooth transition back to formal schooling or bridge learning/skill training.
  - They are informed and directed to existing public services such as primary health centres and rural hospitals.
  - Provide opportunities for self-development and empowerment for the AGs.
  - Increase the nutritional and health status of the participants.

  The scheme uses a rapid reporting system (RRS), a role-based management information system (MIS) that records information about the adolescent females who get benefits under the plan.
- **National Creche Scheme:** It is being implemented as a centrally sponsored scheme through states/UTs by the Ministry of Women and Child Development to provide daycare facilities to children (between the ages of 6 months and six years) of working mothers. The scheme is being implemented with the assistance of states/UTs. The scheme provides the following:
  - Sleeping quarters in day-care centres
  - For children under the age of three, early stimulation is recommended, whereas pre-school education is recommended for children from three to six years
  - Nutrients in addition to the primary food source (to be locally sourced)
  - Surveillance of growth
  - Examination of health and immunisation
- **The Integrated Child Protection Scheme (ICPS):** It is a centrally financed programme that aims to create a protective environment for children from disadvantaged backgrounds and other vulnerable children through collaborations between government and civil society organisations. As a broad umbrella for child protection, the ICPS brings together numerous existing child protection schemes

ICTs and Rural Connectivity

Even while India has achieved significant strides in the digital revolution, the country still has a long way to go to connect the unconnected. There are 104.75 urban internet subscribers for every 100 people in India, according to the Telecom Regulatory Authority of India (TRAI). Still, only 37.67 rural internet subscribers for every 100 people are found in the country. Information and communication technology (ICT) is one of the most critical components contributing to economic growth and development of rural areas.

For rural India to become more digitally active, the Government of India is working diligently and establishing new programmes and policies. The government launched the "Digital India Programme" to improve the efficiency of the public sector. The program aims to turn India into a digitally empowered society and knowledge-based economy. To achieve this goal, high-speed internet access needs be provided; cloud storage needs be utilised; more and more financial transactions should be conducted electronically or cashless transactions should be promoted; digital resources should be made available in Indian languages and government departments need to become more digitally active to improve accessibility and efficiency.

Government Schemes

1. Digital Village Programme: Digi Village is a project that aims to make India's villages digitally literate and connected both digitally and economically. The programme's goal is to make sure that digital technology can be used in a way that helps people to generate livelihoods and to standardise the technology packages to be used in the future.
2. Common Services Centre (CSCs): CSCs are one of the world's most extensive network of digital service providers. They have a broad reach in rural areas up to the Gram Panchayats and block level to help people in these areas. These ICT-enabled kiosks with broadband connections provide many government, private, and social services.
3. BharatNet Scheme: The Government of India announced this scheme as part of its Digital India initiative to bring high-speed internet connectivity to rural areas at an affordable price. This programme will allow citizens in rural and isolated locations to get inexpensive broadband connections.

Focus of Digitisation

Providing access of the digital world to every rural area is a primary goal of digitisation. Improved internet infrastructure in rural India can facilitate better agricultural, educational and healthcare services.

- Agriculture: To create a unified national market for agricultural commodities, the government has established the National Agriculture Market (eNAM), a pan-India electronic trading site that connects the existing Agricultural Produce Market Committee (APMC) mandis.
- Education: To facilitate multi-mode access to education, a comprehensive programme called PM eVIDYA has been launched, which unites all initiatives connected to digital, online, and on-air learning to provide multi-mode access to education. Knowledge sharing infrastructure, access through television channels (SwayamPrabha TV Channels), and e-textbooks are some of the elements of this initiative.
- Health: The Ayushman Bharat Digital Mission (ABDM) is a digital distribution platform that intends to establish the backbone essential to support the country's integrated digital health infrastructure, emphasising rural areas. The Government of India funds the mission. With digital highways, it will be possible to close the gap between different stakeholders in the healthcare ecosystem.

Conclusion

The digitalisation of villages will create a balance between rural India and urban India. Since a significant amount of people in India reside in villages, making rural India digitally equipped has become the need of the hour. The knowledge of the internet for processing different services online can prove highly beneficial for the rural population. Rural connectivity can create employment opportunities, increase the standard of living, ease work, and increase knowledge regarding the internet. Through the internet, rural India can connect with urban areas of the country and the world.

Resources:

https://www.digital-village.in/
https://enam.gov.in/web/
https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1806271
https://pib.gov.in/PressReleasePage.aspx?PRID=1800560
https://pib.gov.in/PressReleasePage.aspx?PRID=1800089
https://pib.gov.in/PressReleseDetail.aspx?PRID=1786560

[1]https://www.trai.gov.in/sites/default/files/QPIR_10012022_0.pdf

run by the ministry and incorporates additional actions for protecting children and preventing harm. Therefore, the ICPS would institutionalise essential services and strengthen structures, increase capacities at all levels, develop a database and knowledge base for child protection services, strengthen child protection at the family and community level, and ensure an appropriate inter-sectoral response at all levels, among other objectives.

The project would establish a child protection data management system, which would allow for the formulation and implementation of effective intervention measures and the monitoring of their outcomes. Regular evaluations of the programmes and organisational structures are carried out, and course corrections are implemented.

- **Swadhar Greh:** Under the scheme, Swadhar Grehs will be established in every district with a capacity of 30 women to meet the primary needs of women in distress who are without any social or economic support, such as housing, food, clothes, medical treatment, and care. Swadhar Grehs have the following objectives:
  - To help people rebuild their emotional power, which their experience with unpleasant circumstances has impaired.
  - To offer them legal assistance and counselling for them to be able to take measures toward reintegrating into their families and communities.
  - To help women regain their financial and mental stability.
  - To serve as a support system that is sensitive to and responsive to the needs of women in distress.
  - To provide women with the opportunity to begin their lives anew with dignity and conviction

More than one Swadhar Greh could be constructed in large cities and other districts with more than 40 lakh people and areas where there is a need for additional support for women. By the requirement evaluation and other essential characteristics, the capacity of Swadhar Greh could be increased to 50 or 100 people.

- **Ujjawala:** The scheme aims to achieve the following objectives
  - Preventing the trafficking of women and children for commercial sexual exploitation through social mobilisation and participation of local communities, awareness generation programmes, generating public discourse through workshops/seminars and other similar events, as well as any other innovative activity.
  - Rescue of victims and their placement in safe custody by making it easier to locate and rescue them from the location of their exploitation.
  - To aid victims with both immediate and long-term rehabilitation services, it is necessary to address their basic needs, including shelter, food, clothing, medical treatment, counselling, legal support and guidance, and vocational training.
  - Helping victims reintegrate with their families and society.
  - Victims of cross-border crimes to be reunited with their families.

Leveraging Digitalisation to Achieve Gender Equality

Despite the wide range of initiatives that have been executed, there is still a need for comprehensive policies on boosting the participation of women in the digital revolution. As discussed, digital technologies can open new avenues for women's empowerment. Still, technology alone will not be able to address the structural issues that are at the root of the digital gender disparity. While addressing persistent assumptions, behaviours, and conventions that lead to discrimination and violence against women, the focus should be on specific legislative actions that promote women and girls' full participation and inclusion in the digital revolution. There is no single solution to narrowing the digital divide between men and women. Gender inequality is caused by various economic, social, political, and cultural barriers, and effective interventions must be based on evidences related to the specific barriers that exist in different situations.

- The government should ensure that new technologies prioritise, safeguard, and promote women's human rights.
- Ethical frameworks for AI auditing, monitoring, and governance must prioritise gender equality.
- The government must address the gender data gap, both in number and quality while retaining privacy and data safety as top priorities.
- Universities, schools, and other educational institutions must equip women and girls for the digital revolution.
- Those who design, develop, and use AI in decision-making must be educated on women's rights-compliant technology.
- Women role models and mentors in STEM must be promoted by policymakers who must address exclusionary policies and terminology.
- For women and men to have equal access to well-paying jobs and professions, companies, particularly in the technology sector, must adopt gender mainstreaming policies.
- Labour market rules that include paid maternity/parental leave and affordable childcare must be developed.

Conclusion

Women Empowerment can be a significant driver of macroeconomic growth and stability in the present and the future. This goal cannot be achieved without the progress of information and communication technologies. Women, who are fundamental participants and critical players in all decision-making processes, have tremendous potential because of this advancement. To accomplish this, we must include a gender equality viewpoint in all aspects of our work and effectively use digitalisation. Men and women should be given equal opportunity in high-tech education and training. We should collaborate to eliminate gender barriers in these sectors and promote equal opportunities in ICT-related enterprises, among other things.

India's rapidly changing advanced scene has enormous opportunities for women empowerment. The women empowerment programme promotes women's social and economic empowerment by establishing community-based reserve funds that assist individuals in saving money, obtaining credit, acquiring financial literacy, and investing in income-generating enterprises. Additionally, the women empowerment initiatives promote ability development, confidence, access to data and assets, and community action, all of which help women develop into confident decision-makers and leaders in their homes and communities.

Sources

1. https://www.unwomen.org/sites/default/files/Headquarters/Attachments/Sections/Library/Publications/2020/The-digital-revolution-Implications-for-gender-equality-and-womens-rights-25-years-after-Beijing-en.pdf
2. https://dbtbharat.gov.in/page/frontcontentview/?id=MTc=
3. https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/jan/doc2022153101.pdf
4. https://pib.gov.in/Pressreleaseshare.aspx?PRID=1579559
5. https://www.sag-rrs.nic.in/#Features-Us
6. https://pib.gov.in/Pressreleaseshare.aspx?PRID=1697421
7. http://wcd-icps.nic.in/public/about.aspx
8. https://wcd.nic.in/sites/default/files/Ujjawala%20New%20Scheme.pdf
9. https://dbtbharat.gov.in/scheme/scheme-list
10. https://www.smartweek.it/digitalization-for-womens-empowerment/

(The author is Researcher, Strategic Investment Research Unit, Invest India. Views expressed are personal. Email: bhakti.jain@investindia.org.in)