ANNUAL REPORT
2020-21

सत्यमेव जयते

Department of Telecommunications
Ministry of Communications
Government of India
New Delhi

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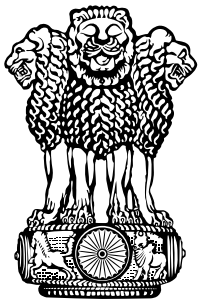

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CHAPTER 1

Department of Telecommunications

The Department of Telecommunications (DoT) is inter-alia responsible for Telecom Policy; Licensing and Coordination matters relating to telegraph, telephones, telecom wireless data; international cooperation in matters connected with telecommunications, promotion of standardization, Research & Development (R&D) in telecommunications; and promotion of private investment in the sector. DoT is also responsible for frequency management in the field of radio communication in close coordination with the international bodies. DoT enforces wireless regulatory measures by monitoring wireless transmission of all users in the country.

1.1 FUNCTIONS OF DEPARTMENT: As per Second Schedule to the Government of India (Allocation of Business) Rules, the functions of the Department are as under (Box 1.1).

BOX 1.1

- Policy, Licensing and coordination matters relating to Telegraphs, Telephones, Wireless, Data, Fascimile, Telematic services and other like forms of communications.
- International cooperation in matters connected with telecommunications including matters relating to international bodies dealing with telecommunications such as International Telecommunication Union (ITU), its Radio Regulation Board (RRB), Radio Communication Sector (ITU-R), Telecommunication Standardization Sector (ITU-T), Development Sector (ITU-D), International Telecommunication Satellite Organization (INTELSAT), International Mobile Satellite Organization (INMARSAT), Asia Pacific Telecommunication (APT).
- Promotion of standardization, research and development in telecommunications.
- Promotion of private investment in telecommunications.
- Financial assistance for furtherance of research and study in telecommunications technology and building up adequately trained manpower for telecom program, including-
  - assistance to institutions, assistance to scientific institutions and universities for advanced scientific study and research; and
  - grant of scholarships to students in educational institutions and other forms of financial aid to individuals including those going abroad for studies in the field of telecommunications.
- Procurement of Stores and equipment required by the Department of Telecommunications.
- Digital Communications Commission (DCC), Telecom Regulatory Authority of India (TRAI) and Telecom Disputes Settlement and Appellate Tribunal (TDSAT).
- Administration of laws with respect to any of the matters specified in this list, namely:
  - The Indian Telegraph Act, 1885 (13 of 1885);
  - The Indian Wireless Telegraphy Act, 1933 (17 of 1933); and (c) The Telecom Regulatory Authority of India Act, 1997 (24 of 1997).
- Post disinvestment matters relating to M/s Hindustan Teleprinters Limited.
- Matters relating to Indian Telephone Industries (ITI Ltd), Bharat Sanchar Nigam Limited (BSNL), Mahanagar Telephone Nigam Limited (MTNL) and Bharat Broadband Network Limited (BBNL)
- Tata Communications Limited(TCL) and Telecommunications Consultants (India) Limited
- All matters relating to Centre for Development of Telematics (C-DOT).
- Residual work relating to erstwhile Department of Telecommunications Services and Department of Telecommunications Operations, including matters relating to-
  - Cadre control functions of Group 'A' and other categories of personnel till their absorption in Bharat Sanchar Nigam Limited;
  - Administration and payment of terminal benefits.
- Execution of works, purchase and acquisition of land debitable to the capital Budget pertaining to telecommunications.

1.2 DIGITAL COMMUNICATIONS COMMISSION (DCC)

The Telecom Commission was set up by the Government of India vide Resolution dated 11th April, 1989 with administrative and financial powers of the Government of India to deal with various aspects of Telecommunications. The Government, vide Resolution dated 22nd October, 2018, has re-designated the 'Telecom Commission' as the 'Digital Communications Commission'.

The Digital Communications Commission consists of a Chairman, four full time members, who are ex-officio Secretaries to the Government of India in the Department of Telecommunications and four-part time members who are the Secretaries to the Government of India in the concerned Departments. The Secretary to the Government of India in the Department of Telecommunications is the ex-officio Chairman of the Digital Communications Commission. The full-time Members of the Digital Communications Commission are Member (Finance), Member (Production), Member (Services) and Member (Technology). The part-time Members of the Digital Communications Commission are Chief Executive Officer, NITI (National Institution for Transforming India) Aayog, Secretary (Department of Economic Affairs), Secretary (Ministry of Electronics and Information Technology) and Secretary (Department for Promotion of Industry and Internal Trade). The Digital Communications Commission is responsible for:

a) Formulating the policy of Department of Telecommunications for approval of the Government;

b) Preparing the budget for the Department of Telecommunications for each financial year and getting it approved by the Government; &

c) Implementation of Government's policy in all matters concerning telecommunication.

The Chairperson, in his/her capacity as Secretary to the Government of India in the Department of Telecommunications is responsible for arriving at decisions on technical questions and advising the Government on policy and allied matters of telecommunications.

The Chairperson and the Members of the Commission, at present, are as under:

Composition of Digital Communications Commission	
Chairperson (Ex-officio)	Secretary (Telecom)
Members(Full time)	Member (Finance)
	Member (Services)
	Member (Technology)
Members(Part time)	CEO, NITI Aayog
	Secretary , Department of Economic Affairs
	Secretary, Ministry of Electronics & Information Technology
	Secretary, Department for Promotion of Industry and Internal Trade

1.2.1 Major decisions taken by the Digital Communications Commission

The Digital Communications Commission approved: -

(i) The State-wise revised strategy for BharatNet implementation to exclude the State of Uttarakhand from the Public Private Partenership (PPP) model and to consider as part of State-led models for BharatNet on account of geographically strategic (Border State), difficult and disaster -prone terrain.

(ii) The proposal for augmentation of satellite bandwidth in Lakshadweep Islands from 318 Mbps to 1.71 Gbps by utilizing GSAT-11 & GSAT-19 capacities at the market discovered cost of ₹28,26,06,539/- plus applicable taxes with the timeline for completion of the project as 8 months from the date of approval.

(iii) The proposal for 4G based mobile services for 7287 uncovered villages in aspirational districts of five States – Andhra Pradesh (1218 villages), Chhattisgarh (699 villages), Jharkhand (827 villages), Maharashtra (610 villages) and Odisha (3933 villages) with an estimated cost of ₹6466 crores for 7287 uncovered villages (4779 towers) on the basis of cost estimation @ ₹1.353 crores per tower.

(iv) The proposal to fix the License fee of ₹1 (Rupee One) per annum for Fixed-line Broadband services, provided to the home through copper pair, fiber to the home (FTTH) and cable TV network. The Commission further approved that the License fee from the revenue earned from Internet services through Public Wi-Fi be charged at the rate of ₹1 (Rupee One) per annum and the Unified License (Virtual Network Operator - Internet Service Provider) [UL (VNO-ISP)] License shall be granted to Public Data Office Aggregator (PDOA) and shall be known as WANI Aggregator for providing Internet Services through Public Wi-Fi.

(v) The proposal of imposition of financial penalty @ ₹5 Lakhs per BTS site for violation of terms and conditions of License agreements by the Telecom Service Providers (TSPs) in respect of provision of mobile services in border areas such as by installing BTSs/Cell sites within 10 kms of International border/ LOC/LAC.

(vi) The following norms for time extension beyond 90 days, for network testing before launch of commercial services:

a) If the Telecom Service Provider (TSP) fails to conclude network testing within 90 days: -

- It shall request three weeks prior to 90 days for extension.
- Number of test subscribers shall be limited to 5% of the initial installed capacity.
- Total time shall not exceed 180 days.

b) Extension shall be granted only on following conditions: -

- New technology is under testing and requires more time to conclude.

- Quality of Service (QOS) not achieved during testing as per TRAI norms.
- Network modifications have been made during initial testing period of 90 days.

(vii) The proposal of levying the spectrum charges at 1% of the AGR of BSNL's satellite-based services under *'sui-generis'* category. These charges would cover the entire spectrum charges for handsets as well as for gateway. An Import License would be granted within 30 days and the same would be declared on the portal as well as in the Citizen's Charter.

(viii) The following major recommendations of TRAI on "Network Testing Before Commercial Launch of Services for Wireline Access Services": -

(a) TSPs shall be allowed to enroll test subscribers during testing phase to carry out network testing before Commercial Launch of Services for Wireline Access Services as it helps in compliance of QoS parameters when services are commercially launched and in testing of new services before launch.

(b) Number of test subscribers shall be limited to 5% of its installed network capacity.

(ix) The following major recommendations of TRAI on "Ensuring Adequate Numbering Resources for Fixed Line and Mobile Services":

(a) Mandating dialing prefix '0' for calling mobile numbers from all fixed line numbers. This will generate approximately 2539 million numbering series by minimal change of providing STD facility to all fixed line services. This would be achieved by utilizing spare Short Distance Charging Area (SDCA) codes available in National Numbering Plan-2003 and also by suffixing '0', '1', '8' and '9' in present SDCA codes starting with '6', '3', '4' and '2'.

(b) Creation of numbering resources by vacating un-utilized/under-utilized fixed line levels.

(c) Allocation of mobile numbering series will follow presently used visitor location register (VLR) criterion.

(d) Shifting of SIM-based M2M connections to 13-digit numbering series.

(x) The following major recommendations of TRAI on Promoting Local Telecom Equipment Manufacturing:

(a) A new scheme, Digital Communications Innovation Square (DCIS) under Champion Services Sectors Scheme (CSSS) has been approved which provides financial assistance for R&D, product development and incubation. DCIS aims to promote R&D and product development through innovation/incubation and promote design led manufacturing in India.

(b) Telecom Centers of Excellence (TCoE) have been set up in IITs.

(c) Non-ITA (Information Technology Agreement) telecom/ electronic items have been identified and basic custom duty (ranging from 10-20%) has been imposed. DCC has approved production-linked incentive (PLI) scheme for incentivizing manufacturing of telecom products.

(xi) The following major recommendations of TRAI on sale/rent of International Roaming SIM Cards/ Global Calling Cards of foreign operators in India:

(a) Provision of tariff plan along with Terms & Conditions, contact details in India & Foreign country (Foreign TSP) at the time of handing over SIM and Tariff rates. Contact details should be available on their website.

(b) Consumer shall preferably be provided toll free customer care service by the foreign TSP. If it is not available, the consumer may be charged at local call rate.

(c) Provision of itemized bill for postpaid customer and prepaid customers on request (at reasonable fee) within reasonable time.

(d) Regarding giving of option to choose a data service or a voice service or combination of both, the NOC holder shall inform the customer about the type of services offered before selling/renting of these cards.

(e) Strengthening of Billing and Consumer Grievance Redressal mechanism of the NOC holder to facilitate time bound resolution (within a period of 30 days) of grievance.

(xii) The proposal for extension of the period of Operations & Maintenance (O&M) and First Line Maintenance (FLM) contract with Common Service Centre- Special Purpose Vehicle (CSC-SPV) for another two years with effect from 01-07-2020 to 30-06-2022 or till implementation of Private Service Partners (PSP), whichever is earlier; with the provision of cost escalation of 5% per year for O&M and FLM. The total financial implication for extension of O&M and FLM for two years would be Rs. 873.84 crores.

(xiii) The proposal for extending BharatNet connectivity from GPs up to villages level on fibre with provisioning of minimum 1 Wi-Fi & 5 FTTH connections in each village for the State of Bihar covering approximately 39436 villages including Phase-II GPs at the estimated cost of ₹630.98 crores through M/s CSC-SPV on nomination basis. The Commission further approved that a Program Management Unit (PMU) would be created by CSC–SPV to monitor and coordinate the planning, implementation, utilization, etc. for this project.

(xiv) The proposal of revised implementation strategy for creation, maintenance and utilization of BharatNet under Public Private Partnership (PPP) model in 16 States. The Commission also approved the financial estimates as: Grant estimates of ₹51,766 crores (with a breakup of Equity Support of ₹17,214 crores and total O&M Support for 5 years as ₹34,683 crores) and total Lifecycle expense estimates of ₹1,15,886 crores (with a breakup of Estimated Project Cost of ₹43,034 crores and total O&M expenses for 25 years as ₹72,851 crores).

(xv) The Department of Telecommunications, with an aim to qualitatively improve the Ease of Doing Business of the IT Industry particularly Business Process Outsourcing (BPO) and IT Enabled Services, held widespread consultations with all the stakeholders, and issued new guidelines for Other Service Providers (OSPs), which will tremendously reduce the compliance burden of the BPO industry.

Under the new guidelines, the registration requirement for OSPs has been done away with altogether and the BPO industry engaged in data related work have been taken out of the ambit of OSP regulations. In addition, requirements such as deposit of bank guarantees, requirement for static IPs, frequent reporting obligations, publication of network diagram, penal provisions etc. have also been removed. Similarly, several other requirements, which prevented companies from adopting 'Work from Home' and 'Work from Anywhere' policies, have also been removed. Additional dispensations to enhance flexibility for the Industry have been allowed.

(xvi) The proposal for amending the ISP Licenses issued prior to UL-ISP under all the regimes to incorporate the definition of Gross Revenue, Adjusted Gross Revenue and rate of License Fee as provided in the UL-ISP License and deliberated that amending the license retrospectively from the date of issuing first UL-ISP license, as proposed, may lead to a situation wherein Internet Service Providers pass on the burden of past dues on to the internet subscribers. Accordingly, the Commission decided that the proposed amendment in pre- UL-ISP licenses may be implemented prospectively. The Commission further directed to seek legal advice on the issue of its applicability retrospectively.

(xvii) PLI Scheme to promote Telecom and Networking Products in India within overall budgetary outlay of ₹12195 Cr. over a period of five years. DCC further decided that an Empowered Committee constituted by the Government shall be authorised to revise incentive rates, ceilings, target segments and eligibility criteria as deemed appropriate during the tenure of the scheme which shall be on the following broad principles: -

a) A minimum threshold criterion for investments to qualify for the incentives under the scheme.

b) A minimum and maximum threshold criterion of sales over base year to qualify for the incentives under the scheme.

(xviii) The proposal of undertaking the restoration of OFC cuts which are more than 500 m OFC faults under BharatNet Phase-I in order to utilize the last mile infrastructure of BharatNet Phase-I by Wi-Fi & FTTH by BBNL through open competitive tender. The estimated cost for carrying out this work is ₹276.9 crores as per the rates communicated by BBNL. The works carried out and materials procured shall be of the same specifications and technical design as in Phase-I and shall be ensured by BBNL.

(xix) The proposal of awarding the work of providing 5 FTTH connections in the Government Institutions such as Police Stations, Public Health & Wellness Centres, Schools, Anganwadis, Panchayats and Agriculture depot/Ration shops etc. in 4802 GPs of Punjab under BharatNet

Phase-II by CSC-SPV on nomination basis @ ₹80,000/- per GP at an estimated cost of ₹38.42 crores.

(xx) The following proposal of USOF scheme for Provision of mobile services in Left Wing Extremism (LWE) Phase-II areas:

a. Revision of technology from '2G+4G' to 4G for LWE-II project.

b. Floating of RFP on 4G technology for 2542 tower locations at the estimated cost of Rs. 2,288 crore @ ₹0.90 crore per tower (CAPEX ₹1307 crore + OPEX ₹981 crore for 5 years), as benchmark cost.

c. Total cost estimate will be ₹2,745.60 crore including cost of 20% additional towers as per quantity variation clause**.**

(xxi) The proposal for increase in number of GPs through Satellite based connectivity at difficult places like NER, J&K, HP, Uttarakhand, Islands etc. and for two additional Gateways and Last Mile Connectivity at these GPs, along with its consequent Cost revision under BharatNet project Phase-II with a revised cost of ₹973.37 crores exclusive of GST and other statutory charges / infra lease charges which shall be paid on actuals.

Further, provision of Last Mile connectivity at 5521 locations for an overall cost of **₹77.064 crore** for 9633 Access Points excluding taxes.

1.3 ORGANIZATIONAL CHART

The Organization chart of the Department of Telecommunications is at **Annexure-II**.

1.4 STATUTORY / REGULATORY BODIES IN THE TELECOM SECTOR

The Telecom Regulatory Authority of India (TRAI) is a statutory body. It is the sector regulator and plays a pivotal role in development of the telecom, broadcasting and cable services. It has worked towards providing a fair and transparent environment which encourages competition and level-playing field for service providers and protecting the interest of consumers and enabling technological advancement. The Telecom Disputes Settlement & Appellate Tribunal (TDSAT) performs the role of an appellate body. The details of their functioning are given in Chapter 6.

1.5 ATTACHED, SUBORDINATE AND FIELD OFFICES OF DOT

The Department of Telecommunications has four attached offices: (i) Universal Service Obligation Fund (USOF) (ii) Telecom Engineering Centre (TEC) (iii) Director General Telecom and (iv) Controller General of Communication Accounts (CGCA)

The Department has four subordinate offices, namely (i) the Wireless Monitoring Organisation (WMO) (which functions under the Wireless Planning and Coordination wing of DoT), (ii) the National Telecommunications Institute for Policy Research, Innovation & Training (NTIPRIT), (iii)

National Centre for Communication Security (NCCS) and (iv) National Institute of Communication Finance (NICF). The Department also performs certain regulatory and enforcement functions in the domain of satellite communications through its Network Operations Control Center (NOCC).

There are 37 DoT Field Units in all the 22 Licensed Service Areas located across the country which are under the administrative control of Director General Telecom. There are 28 Controller of Communication Accounts (CCA) offices located across the country which are under the control of Controller General of Communication Accounts (CGCA).

The functions of these offices are given in the following paragraphs, in brief [1].

Universal Service Obligation Fund (USOF): Universal Service Obligation Fund (USOF), formed by an Act of Parliament, was established w.e.f. 01.04.2002 under the Indian Telegraph (Amendment) Act 2003 (further amended in 2006), to provide financial support for the provision of telecom services in commercially unviable rural and remote areas of the country. It is an attached office of the Department of Telecommunications, and is headed by the Administrator, USO Fund, appointed by the Central Government.

The resources for implementation of USO are raised by way of collecting a Universal Service Levy (USL), which is 5% of the Adjusted Gross Revenue (AGR) of Telecom Service Providers. It is a non-lapsable Fund. Levy amount is credited to Consolidated Fund of India. Fund is made available to USOF after due appropriation by the Parliament

The USO Fund was established with the fundamental objective of providing access to 'basic' telecom services to people in the rural and remote areas at affordable and reasonable prices. Subsequently the scope was widened to provide subsidy support for enabling access to all types of telecom services, including mobile services, broadband connectivity and creation of infrastructure like OFC in rural and remote areas

Telecommunication Engineering Centre (TEC): "Telecommunication Engineering Centre (TEC)" is the Technical Wing of DoT. Its Mission is to:

- Develop new specifications and update the existing ones in order to keep pace with the global development.
- Establishment of state-of-art telecom laboratories.
- Actively participate in professional bodies such as ITU, IETF, APT etc. to protect country's interest.
- Technology approval for C-DOT in order to develop telecom technology aimed specifically for local manufacturer."

Director General Telecom (DGT): Office of Director General, Telecom is an Attached Office of Department of Telecommunications (DoT) and headed by an Apex Level Officer. The post of Director

1 Further details on attached, subordinate and field organisations are in Chapter 4&7.

General Telecom was created with an objective of monitoring and controlling the Department's LSA field units in all the 22 Licensed Service Areas (LSAs) located across the country. Headquarters of Director General Telecom (DGT-HQ) is located in Delhi.

At present, there are 37 LSA field units located across the country. The LSA officers represent the licensing/ telegraph authority in the field. The LSA field units play an important role as an interface between the State Government and DoT for activities such as Right of Way issues, Smart City coordination, IPv6 implementation, improving the coverage in uncovered areas, etc., The LSA field units' function as an interface between Law Enforcement Agencies and the Telecom Service Providers in the matters related to Natioal Security. In addition to the above, the LSA field units play a crucial role in implementation of time synchronisation across the telecom network, inspection of USO funded sites, National Broadband Mission to provide each and every household with broadband connectivity, using telecom analytics for protecting consumers from Cyber Frauds, etc.

Controller General of Communication Accounts Offices (CGCA): The office of Controller General of Communication Accounts (CGCA) is an attached office of the Department of Telecommunications (DoT) and is headed by an Apex level officer. The office of the CGCA presently functions from the NICF Campus at Ghitorni, New Delhi. Controller General of Communication Accounts has been tasked to supervise the functioning of Controller of Communication Accounts (CCAs). There are 28 CCAs offices located across the country.

The Principal CCA/CCA offices play a critical role in providing a professional interface between DoT and its various stakeholders at the ground level on issues such as collection & assessment of license fee and spectrum usage charges, management of USO Fund, review of USO activities etc.

Wireless Monitoring Organisation (WMO): WMO performs various functions related to spectrum management such as resolution of harmful interference, monitoring/identification of frequency sub-bands for introduction of new services and/ or for additional allocation to existing services; monitoring for spectrum recovery – unused/ under-used frequency authorizations; inspection of licensed installations, monitoring of space emissions to protect authorized satellite transmissions, etc.

WMO, a field unit of WPC Wing, carries out wireless monitoring through 22 Wireless Monitoring Stations, 1 International Satellite Monitoring Earth Station (ISMES), 5 International Monitoring Stations (IMSs) strategically located all over India. WMO is also equipped with 5 Radio Noise Survey Units, which undertake detailed and complicated measurements to aid in the spectrum management activity. The Headquarter of WMO is situated in New Delhi. It also has four Regional Headquarters (RHQs) at New Delhi, Mumbai, Kolkata and Chennai. WMO has its own Training Facility at Wireless Monitoring Training & Development Centre (WMTDC), New Delhi, a nodal agency for conducting training courses for officials and staff of Indian Radio Regulatory Service.

National Telecommunications Institute for Policy Research, Innovation & Training (NTIPRIT): NTIPRIT was established in the year 2010 as National Telecom Academy, the telecom training institute of Department of Telecommunications. Subsequently, in year 2011, the mandate of institute was expanded by bringing into the activities related to Policy Research and Innovations under its ambit and the institute was rechristened as National Telecommunications Institute for Policy Research. The

institute is now a Central Training Institute (CTI) enlisted with Department of Personal & Training. NTIPRIT is presently operating from the campus of Advance Level Telecom Training Centre (ALTTC) of BSNL at Ghaziabad.

National Centre for Communication Security (NCCS): National Centre for Communication Security (NCCS) is to establish and operationalise a framework of security testing and certification framework within the country. Presently, three verticals under NCCS are Security Assurance Standards (SAS) division, Security Lab Recognition (SLR) division and Security Certification (SC) division. It is a center under Department of Telecommunications is created, with headquarters at Bengaluru is headed by Sr. DDG level officer and the unit has become operational as a subordinate office with delegated financial powers and operational budget for the year 2020-21. In order to make the network more secure and less vulnerable from internal and external threats, Government envisaged a pilot Telecommunication Testing and Security Certification (TTSC) project for testing and validating each network element before its integration with the network. The Security Assurance Standards Facility (SASF) of Department of Telecommunication at Bengaluru is an outcome of this pilot project and will be the national facility for coming up with the Security Assurance Requirements for Telecom equipment to be inducted into the Indian telecom networks. It is equipped with a test bed for conducting research and development of security standards and framing the security requirements for the communication equipment. A proposal for setting up a 5G security test bed at NCCS, Bengaluru is also under consideration.

The National Institute of Communication Finance (NICF): The National Institute of Communication Finance (NICF), established in 2000 (with different name and venue), is a Department of Personnel & Training (DoPT) recognized Central Training Institute (CTI) under the Department of Telecommunications. The NICF has been entrusted with the responsibility of imparting training to Indian Posts & Telecom Accounts and Finance Service (IP&TAFS) Group 'A', 'B' & 'C' cadres, which includes Probationary Training of IP&TAFS Group 'A' officers recruited by the UPSC through Civil Services Examination as well as Induction Training of Group 'B' & 'C' cadres apart from organizing and conducting regular national and international seminars and workshops.

Network Operations Control Center (NOCC): NOCC performs the function of online operational control, coordination regulation of space segment usage and monitoring of all the satellite based services like VSAT (Very Small Aperture Terminal) applications, broadcasting, DTH (Direct-To-Home), HITs (Head-end in the Sky), ISP (Internet service provider) etc. in India on Indian and foreign satellites; resolving the RF (Radio frequency) interference, mandatory performance verification testing of antennae of satellite earth stations and DSNG (Digital Satellite News Gathering). NOCC monitors and controls parameters of carrier uplink from 1565 Satellite Earth Stations/Teleports/DSNG & more than 2,85,000 VSATs. NOCC has endeavored to provide interference free environment to various satellite users in country while providing mandatory clearances within three working days to applicant agencies.

1.6 PSUs AND AUTONOMOUS BODIES UNDER DOT

There are 5 PSUs under DoT namely Bharat Sanchar Nigam Limited (BSNL), Mahanagar Telephone Nigam Limited (MTNL), ITI Limited (ITI), Telecommunications Consultants India Limited (TCIL)

and Bharat Broadband Network Limited (BBNL). The Centre for Development of Telematics (C-DOT) is an autonomous body and is also the R&D arm of the Department. Brief functions of these organizations are given below[2].

BSNL fully owned by Government of India, was formed in October 2000. It provides telecom services across the length and breadth of the country excluding Delhi and Mumbai. BSNL is providing all types of telecom services namely telephone services on landline, mobile, broadband, internet, leased circuits and long distance telecom services. Rural telephony is one of the focus areas of BSNL alongwith special emphasis on development of telecommunication facilities in North-Eastern region, tribal areas as well as in the LWE-affected areas.

MTNL set up in 1986, provides telecommunication facilities in India's key metros - Delhi and Mumbai. MTNL provides fixed-line service in these two Metropolitan Cities. For Cellular services, the company has the license to provide services in Delhi including NCR (towns of Ghaziabad, Faridabad, Noida and Gurgaon) and in Mumbai including Navi Mumbai, Kalyan & Dombivili. The company has an authorized capital of ₹10,000 crore and paid up share capital of ₹630 crores. At present, 56.25% of the equity is held by Government, and the remaining equity is held by FIIs, Financial Institutions, Banks, Mutual Funds and others including individual investors.

ITI Limited (earlier Indian Telephone Industries Ltd) was established in 1948 with the vision of attaining self-reliance in the field of telecommunication needs of the country. The company was set up at Bangalore (Karnataka) with Govt. of India holding majority equity stake in the Company. ITI has its Registered & Corporate Office located at Bangalore. The Company is a Schedule 'A' CPSE in Heavy and Medium Engineering Sector.

For manufacture and supply of telecom equipments to the Department, ITI started its operations in Bangalore in 1948, and subsequently manufacturing plants were set up at Srinagar in Jammu and Kashmir; Naini, Rae Bareli and Mankapur in Uttar Pradesh; and Palakkad in Kerala. All the manufacturing plants are accredited with ISO 9001-2015 and ISO 14001-2015 standards.

TCIL was set-up on 10.03.1978 with the main objective of providing world class technology in all fields of telecommunications and information technology to excel in its operations in overseas and in the domestic markets by developing proper marketing strategies, to acquire state of the art technology on a continuing basis and maintain leadership. It has diversified into Cyber Parks, Intelligent Buildings, Cyber & Smart Cities and upgrading legacy networks by focusing on Broadband Multimedia Convergent Service Networks, entering new areas of IT as systems integrator in Telecom billing customer care value added services; e-governance networks and Telecom fields by utilizing TCIL's expert technical manpower, developing Telecom and IT training infrastructure in countries abroad and aggressively participating in SWAN and IT-education projects in various States.

BBNL a Special Purpose Vehicle (SPV), namely, Bharat Broadband Network Limited (BBNL) has been incorporated on February 25, 2012 under the Indian Companies Act, 1956 with an authorized share capital of ₹1000 crore. As per the mandate given by the Government of India, BBNL shall set up,

2 Further details on the PSUs and autonomous bodies is given in chapter 5.

provide (i.e. procure, install, test, commission), operate, maintain and manage OFC under the flagship BharatNet programme of the Government.

C-DOT Centre for Development of Telematics (C-DOT) is an autonomous telecom research & development body funded by the Department of Telecommunications. It was established under the Society Registration Act XXI in 1984 to design and develop indigenous switching technology. C-DOT is presently engaged in developing state-of-the-art telecommunication technology to meet the needs of the Indian telecommunication network. It is involved in research and development (R&D) activities as well as in field implementation of technologies developed.

CHAPTER 2

The Telecom Sector, Programs and Policy initiatives

The Telecommunication has been recognized the world-over as a powerful tool of development and poverty reduction through empowerment of masses. It is one of key element of the Sustainable Development Goals (SDGs) of the United Nations Agenda for Sustainable Development for 2030, reflecting its growing reach, better networks and adoption of tools and solutions that enhance digitisation of systems, processes and interactions across key sectors like agriculture, banking and healthcare in developing and middle income countries.

2.1 TELECOM SECTOR

The telecom sector is backed by supportive policies of the Government of India. The Government has ensured fair competition among service providers, and a fair and proactive regulatory framework that has resulted in telecom services being available to consumer at affordable prices. Further, it has made sustained efforts at encouraging telecom equipment manufacture.

India is currently the world's second-largest country in terms of subscriber base of 1.17 billion. India's mobile subscriptions now constitute about 98% of all telephone subscriptions. The mobile industry is characterized by affordable tariffs, wider availability, roll out of Mobile Number Portability (MNP), expanding 3G and 4G coverage, evolving consumption patterns and supportive policy and regulatory environment.

The Government has placed considerable emphasis on internet and broadband in the country as part its Digital India campaign. Mobile has now emerged as the main platform for internet access in India, bringing connectivity to many previously unconnected populations. Efforts are being made to address the digital divide by extending inclusive internet access to every Indian, as mobile technology looks to empower the masses and become the critical means of accessing a broad range of public services.

BOX 2.1 Snapshot of present status at the end of November, 2020
• Indian telecom network is 2nd largest in the world in terms of telephone connections
• The country has 1175.22 million telephone connections
• There are 1155.15 million wireless telephone connections
• Overall tele-density in the country is 86.55%
• Urban tele-density is 139.01%
• Rural tele-density is 59.08%
• Share of wireless telephones in total telephones is 98.29%
• The share of private sector in total telephones is 88.71%
• Number of Broadband connections is 734.82 million (Octoober 2020)

Wire line and Wireless: The Landline telephone connections are at 20.07 million while the number of wireless telephone connections stood at 1155.75 million at the end of November'20. Share of wireless telephones stood at 98.29% of all connections.

Public and Private: The private sector now firmly dominates the telecom sector. At the end of November'20, the total number of telephone connections provided by the private sector stood at 1042.57 million and number of telephone connections provided by the public sector stood at 132.65 million. The share of private sector in the total number of connections was 88.71% at the end of November'20 (Table 2.1).

Table 2.1: Telecom Development Indicators

Sl. No.	Item		At the end of				
			March'18	March'19	March'20	November' 19	November' 20
1	Number of Telephones (In million)	Overall	1211.80	1183.41	1176.79	1174.66	1175.22
2		Wire line	22.81	21.70	19.13	20.27	20.07
3		Wireless	1188.99	1161.71	1157.66	1154.39	1155.15
4		Rural	529.01	522.91	521.25	509.62	526.39
5		Urban	682.79	660.50	655.54	665.04	648.83
6	Tele-density (Telephones per 100 persons)	Overall	91.09	86.37	88.66	88.81	86.55
7		Rural	58.23	58.85	57.87	56.71	59.08
8		Urban	160.78	138.97	153.68	156.89	139.01
9	%age share	Wireless	98.12	98.17	98.37	98.27	98.29
10		Public	10.86	11.28	11.47	11.40	11.29
11		Private	89.14	88.72	88.53	88.60	88.71

Tele-density: Tele-density, which denotes the number of telephones per 100 populations, is an important indicator of telecom penetration. Overall tele-density in India was 86.55% at the end of November'20. The rural tele-density was 59.08% while that in urban areas it was 139.01%. Amongst the Service Areas, Himachal Pradesh (149.90%) had the highest tele-density followed by Kerala (129.00%), Punjab (126.15%), Tamil Nadu (105.73%) and Karnataka (104.20%). On the other hand, tele-density is comparatively low in service areas such as Bihar (52.71%), Uttar Pradesh (68.66%), West Bengal (66.74%), Madhya Pradesh (68.14%), Assam (68.66%) and Odisha (76.28%). Amongst the metros, Delhi tops in tele-density with 274.75%, followed by Kolkata (161.57%) and Mumbai (151.44%).

Internet and broadband penetration: The Government has placed considerable emphasis on internet and broadband in the country as part of its Digital India campaign. The number of Internet subscribers (both broadband and narrowband put together) which was 687.62 million at the end of Sptember, 2019 increased to 776.45 million by the end of September, 2020. The number of subscribers accessing internet via wireless phones etc. was 752.09 million at the end of September, 2020 while number of wireline internet subscribers was 24.36 million. The number of Broadband subscribers was 664.08 million at the end of October, 2019 and 734.82 million at the end of October , 2020.

2.2 NATIONAL DIGITAL COMMUNICATIONS POLICY-2018

Keeping in view the modern technological advancements in the telecom sector such as 5G, Internet of Things (IoT), Machine to Machine (M2M) interface etc., a need was felt to introduce a 'customer focused' and 'application driven' policy for the Indian telecom sector which can form the main pillar of Digital India by addressing emerging opportunities for expanding not only the availability of telecom services but also telecom-based services. Accordingly, National Digital Communications Policy – 2018 was announced.

NDCP-2018 envisions fulfilling the information and communication needs of citizens and enterprises through the establishment of a ubiquitous, resilient, secure, accessible and affordable digital communications infrastructure and services; and in the process, supporting India's transition to a digitally empowered economy and society. The key objectives of the policy, to be achieved by 2022 are: provisioning of Broadband for all; creating 4 Million additional jobs in the Digital Communications sector; enhancing the contribution of the Digital Communications sector to 8% of India's GDP from ~ 6% in 2017; propelling India to the top 50 Nations in the ICT Development Index of ITU from 134 in 2017; enhancing India's contribution to Global Value Chains; and ensuring Digital Sovereignty. For accomplishing these objectives by year 2022, the National Digital Communications Policy, 2018 envisages three Missions as under:

Connect India: Creating Robust Digital Communications Infrastructure to promote Broadband for all as a tool for socio-economic development, while ensuring service quality and environmental sustainability. This mission shall be accomplished by achieving following goals;

a. Provide Universal broadband connectivity at 50Mbps to every citizen

b. Provide 1 Gbps connectivity to all Gram Panchayats of India by 2020 and 10 Gbps by 2022

c. Enable 100 Mbps broadband on demand to all key development institutions including all educational institutions

d. Enable fixed line broadband access to 50% of households

e. Achieve 'unique mobile subscriber density' of 55 by 2020 and 65 by 2022

f. Enable deployment of public Wi-Fi Hotspots; to reach 5 million by 2020 and 10 million by 2022

g. Ensure connectivity to all uncovered areas

Propel India: Enabling Next Generation Technologies and Services through Investments, Innovation and IPR generation, to harness the power of emerging digital technologies, including 5G, AI, IoT, Cloud and Big Data to enable provision of future ready products and services; and to catalyse the fourth industrial revolution (Industry 4.0) by promoting Investments, Innovation and IPR. This mission shall be accomplished by achieving following goals;

a. Attract investments of USD 100 Billion in the Digital Communications Sector

b. Increase India's contribution to Global Value Chains

c. Creation of innovation led Start-ups in Digital Communications sector

d. Creation of Globally recognized IPRs in India

e. Development of Standard Essential Patents (SEPs) in the field of digital communication technologies

f. Train/ Re-skill 1 Million manpower for building New Age Skills

g. Expand IoT ecosystem to 5 Billion connected devices

h. Accelerate transition to Industry 4.0

Secure India: Ensuring Sovereignty, Safety and Security of Digital Communications to secure the interests of citizens and safeguard the digital sovereignty of India with a focus on ensuring individual autonomy and choice, data ownership, privacy and security while recognizing data as a crucial economic resource. This mission shall be accomplished by achieving following goals;

a. Establish a comprehensive data protection regime for digital communications that safeguards the privacy, autonomy and choice of individuals and facilitates India's effective participation in the global digital economy

b. Ensure that net neutrality principles are upheld and aligned with service requirements, bandwidth availability and network capabilities including next generation access technologies

c. Develop and deploy robust digital communication network security frameworks

d. Build capacity for security testing and establish appropriate security standards

e. Address security issues relating to encryption and security clearances

f. Enforce accountability through appropriate institutional mechanisms to assure citizens of safe and secure digital communications infrastructure and services.

2.3 INITIATIVES AND REFORMS

2.3.1 National Broadband Mission: The National Broadband Mission was launched on 17th December 2019 with a vision to fast track growth of digital communications infrastructure, bridge the digital divide, facilitate digital empowerment and inclusion, and provide affordable and universal access of broadband for all. Some of the objectives of the Mission which is structured with strong emphasis on the three principles of universality, affordability and quality are:

(i) Broadband access to all villages by 2022

(ii) Facilitate universal and equitable access to broadband services for across the country and especially in rural and remote areas

(iii) Laying of incremental 30 lakhs route km of Optical Fiber Cable and increase in tower density from 0.42 to 1.0 tower per thousand of population by 2024

(iv) Significantly improve quality of services for mobile and internet

(v) Develop innovative implementation models for Right of Way (RoW) and to work with States/

UTs for having consistent policies pertaining to expansion of digital infrastructure including for RoW approvals required for laying of OFC

(vi) Develop a Broadband Readiness Index (BRI) to measure the availability of digital communications infrastructure and conducive policy ecosystem within a State/UT.

(vii) Creation of a digital fiber map of the Digital Communications network and infrastructure, including Optical Fiber Cables and Towers, across the country

(viii) Investment from stakeholders of USD 100 billion (₹7 Lakh crore) including ₹70,000 crore from Universal Service Obligation Fund (USOF)

(ix) Address policy and regulatory changes required to accelerate the expansion and creation of digital infrastructure and services

(x) Work with all stakeholders including the concerned Ministries / Departments/ Agencies, and Ministry of Finance, for enabling investments for the Mission.

2.3.2 Right of Way Rules: The Government has notified the Indian Telegraph Right of Way Rules, 2016 to regulate underground infrastructure (optical fibre) and overground infrastructure (mobile towers). This rule is applicable to all telecom service providers holding a licence issued under sub-section (1) of section 4 of the Indian Telegraph Act, 1885.These rules have simplified the grant of right of way permissions for creation of telecom infrastructure by making it transparent and time-bound. All States/Union Territories and the concerned Central Government Departments/Agencies have been asked to align their Right of Way policies with the IT RoW Rules, 2016. So far, 20 States/UTs have done the required alignment and remaining States/UTs are in the process to accomplish the task.

An Empowered Task Force has been constituted under the Chairmanship of AS (T) alongwith members from all concerned Central Ministries/Departments to make recommendations to develop a common Right of Way framework in line with the Indian Telegraph Right of Way Rules, 2016 for the rollout of Digital Communications Infrastructure.

2.3.3 Broadband Readiness Index (BRI): The National Digital Communication Policy-2018 (NDCP-2018) acknowledges the need for building a robust digital communications infrastructure leveraging existing assets of the broadcasting and power sector including collaborative models involving State, Local bodies and the Private sector. Accordingly, in order to address Right of Way challenges and attract investments, the NDCP-2018 envisages formulation of Broadband Readiness Index for the States/UTs.The index envisages accomplishing the following objectives:

- Creation of a Robust and High-Quality Digital Communications infrastructure
- Attracting Investments in creating next generation DC infrastructure
- Simplification of compliances and procedures
- Creating an institutional mechanism between Centre, States and Local Bodies

Department of Telecommunications (DoT) has entered into a Memorandum of Understanding with Indian Council for Research on International Economic Relations (ICRIER) to develop Broadband

Readiness Index for Indian States and UTs for the period 2019-22. DoT conducted several Video Conference meetings and Regional Workshops during 2019-20, as a part of its nationwide State Government outreach programme, for achieving the goals of the National Digital Communications Policy 2018, including the development of Broadband Readiness Index of the States/UTs.

- Regional workshop was conducted at Chennai for Southern Region States, at Guwahati with North-Eastern Region States, at Chandigarh with Northern States and at Patna with Eastern Region States.
- The Regional Workshop on 'Broadband Readiness Index and Review of implementation of Government Schemes' was held on 14.03.2020 under the Chairmanship of Hon'ble Minister of Communications, Law & Justice and Electronics and Information Technology, wherein Officers from DoT, MeitY and Eastern Region States attended the meeting.

All these workshops discussed about Broadband Readiness Index (BRI) for States/UTs, Right of Way (RoW) policy issues, Implementation and utilization of BharatNet, Connectivity to uncovered villages, Electromagnetic Field (EMF) related issues. These workshops clearly brought out the role of States/ UTs to improve digital connectivity and infrastructure readiness throughout the country. It was agreed that for India's transition to a digitally empowered economy and society, fulfilling the information and communications needs of citizens and enterprises, and bridging the digital divide; State Governments and Union Government have to work together in close coordination.

After collection of data from the States/UTs and from the Stakeholders like TAIPA, COAI, Telecom Service Providers etc., the Broadband Readiness Index report is being prepared by ICRIER, which is currently in the final stage.

Shri Hari Ranjan Rao, JS(Telecom) and other Senior Officers from DoT LSA Units during the "Regional Workshop on Broadband Readiness Index" at Guwahati on 04.03.2020

Shri Ravi Shankar Prasad, Hon'ble Ministry of Communications, Secretary (DoT) and other Senior Officers of DoT attending the "Regional Workshop on Digital Infrastructure Readiness and Review of implementation of Government schemes" at Patna on 14.03.2020

2.3.4 Reducing Financial Stress on TSPs: While India has one of the lowest data usage charges in the world and data usage per mobile subscriber has also galloped, the Average Revenue Per User (ARPU) has witnessed a fall. The telecom sector has also undergone consolidation. From more than 10 major Telecom Service Providers (TSPs), the sector is now down to 3 major private TSPs in addition to two PSUs, BSNL and MTNL. To give boost to the sector following steps have been taken by the Government

(i) **Increase in time period for payment of spectrum acquired in auctions:** Due to churning and consolidation in the telecom sector, number of operators in the sector got reduced leading to financial stress on few remaining players. Considering the financial stress in the Telecom Sector and huge pay out of spectrum dues, the Government, in March 2018, permitted to restructure the payment of annual spectrum charges from existing 10 annual instalments to sixteen instalments resulting in reduced annual cash outflow for the TSPs.

(ii) **1-2 years' moratorium for payment of spectrum acquired in auctions:** Further to give the desired fillip to the sector, Government in November 2019 has taken another step to ease the financial stress of the TSPs. The Government gave an option to the TSPs to defer payment of the spectrum auction instalments due for the years 2020-21 & 2021-22, either for one or both years. The TSPs have chosen deferment of the annual instalments. The amounts which will not accrue to the Government in this period of moratorium have been spread equally in the remaining instalments to be paid by TSPs, while preserving the Net Present Value (NPV) of the payable amount.

2.3.5 Prime Minister's Wi-Fi Access Network Interface (PM-WANI): The Union Cabinet on 9th December, 2020 has approved setting up of Public Wi-Fi Networks by Public Data Office Aggregators

(PDOAs) to provide public Wi-Fi service through Public Data Offices (PDOs) spread across length and breadth of the country to accelerate proliferation of Broadband Internet services through Public Wi-Fi network in the country. This framework takes forward the goal of National Digital Communications Policy, 2018 (NDCP) of creating a robust digital communications infrastructure across India. Proliferation of Broadband Services through public Wi-Fi is a step towards Digital India and consequential benefit thereon. This will encourage technology entrepreneurs to develop and deploy Wi-Fi technology solutions triggering Make in India. This new eco system will also enable new business models for shopkeepers as potential PDOs to provide high speed broadband services. No License Fee for providing broadband internet services using public Wi-Fi Hotspots will massively encourage its proliferation and penetration across the length and breadth of the country. Availability and use of broadband will enhance incomes, employment, quality of life, ease of doing business etc. Under the PM WANI framework, online registrations of PDOAs and App providers began on 07.01.2021. Within few days, as on 22.01.2021, a total of 17 PDOAs and 9 App Providers have been issued Registration Certificates by DoT.

2.3.6 Simplifying Regulations/ and Reducing Compliance Burden for Business Process Outsourcing (BPO)/ Business Process Management (BPM)/ Information Technology enabled Services (ITeS): Unnecessary regulation and excessive compliance burden were becoming a major bottleneck for the BPO industry, which was otherwise poised for phenomenal growth. Earlier, the guidelines governing OSPs had provision for Work-From-Home (WFH) for their employees/ agents. However, due to the stringent conditions in the guidelines, WFH facility was not being utilized optimally. During the current pandemic of COVID-19, OSPs and their customers started facing the challenge due to lockdowns and an urgent need was felt to simplify Work Form Home guidelines to enable continued operations of these entities without any hurdle and review the registration norms and guidelines governing Other Service Providers.

There was a pressing demand from OSPs seeking relaxation in the Terms and Conditions with respect to the Work from Home in the wake of COVID-19. TRAI had also given certain recommendation on the issue. The Department of Telecommunications, with an aim to qualitatively improve the Ease of Doing Business of the IT Industry particularly Business Process Outsourcing (BPO) and IT Enabled Services, held widespread consultations with all the stakeholders, and issued new guidelines, which tremendously reduce the compliance burden of the BPO industry.

Under the new guidelines, the registration requirement for OSPs has been done away with altogether and the BPO industry engaged in data related work have been taken out of the ambit of OSP regulations. In addition, requirements such as deposit of bank guarantees, requirement for static IPs, frequent reporting obligations, publication of network diagram, penal provisions etc. have also been removed. Similarly, several other requirements, which prevented companies from adopting 'Work from Home' and 'Work from Anywhere' policies, have also been removed. Additional dispensations to enhance flexibility for the Industry have been allowed.

2.3.7 Development of Online License Management System of DoT: A web-based portal, "SARAL SANCHAR" (Simplified Application for Registration and Licenses) for issuing of various types of Licenses and Registration Certificates for OSPs (Other Service Providers) has been developed by the

Department of Telecommunications. Apart from licensing other applications are also being processed on this portal.

2.3.8 Public Procurement (Preference to Make in India), Order 2017

The Preference to Make in India (PMI) policy is an important tool to leverage large domestic market to nurture domestic companies. In line with the Public Procurement (Preference to Make in India), Order 2017 issued by the Department of Investment Policy and Promotion (Now Department for Promotion of Industry and Internal Trade), the Department of Telecommunications has notified on the 29th August, 2018 the Public Procurement (Preference to Make in India) Order, 2017 for telecom products, services and works for telecom sector. The manufacturers and the suppliers of 36 notified telecom products, works and services are given preference in procurement by the procuring entities for a specified percentage of the procurement order, subject to the local suppliers satisfying the local content criteria. The PMI policy is making available the market access to the domestic companies and the huge domestic market is enabling them scaling up their production and also being competitive.

The clause 10(d) of aforesaid DPIIT's Public Procurement (Preference to Make in India), Order 2017 stipulates that "If a Nodal Ministry is satisfied that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, it may, if it deems appropriate, restrict or exclude bidders from that country from eligibility for procurement of that item and/ or other items relating to that Nodal Ministry". The Department for Promotion of Industry & Internal Trade has identified Department of Telecommunications as the Nodal Department for implementing the provisions related to procurement of goods, services or works related to the telecommunication sector.

After consultations with the domestic industry and the Government procuring agencies, the following telecom items have been identified for action under clause 10(d) of PPP MII Order, 2017:

I. SDH/Carrier-Ethernet/MPLS-TP/Packet Optical Transport equipment/ PTN/OTN systems

II. Wireless/Wireline PABXs & IP PBX

III. GPON /XGS-PON, NG-PON2 equipment (including ONT and OLT)

IV. CPE (including Wi-Fi Access points and Routers, Media Converters),2G/3G/4G/LTE Modems

V. Optical Fibre Cable

VI. DWDM/CWDM systems

VII. IP/MPLS Core routers/ Edge/ Enterprise Router File No.6-67/2018-Policy-I

VIII. Wi-Fi based broadband wireless access systems (Including Access Point, Aggregation Block, Core Block), Integrated Broadband system

2.3.9 Import and Export of Telecom equipments including mobile phones, parts, SIM cards and telecom cables:

As per DGCIS (Directorate General of Commercial Intelligence and Statistics), the import of telecom

equipment including mobile phones, parts and telecom cables during 2019-20 was ₹1,06,195 crore and from April 2020 to November 2020 is ₹66,673 crore. As per DGCIS, the export of telecom equipment including mobile phones, parts and telecom cables during 2019-20 was ₹37,963 crore and from April 2020 to November 2020 is ₹7,863 crore.

2.3.10 Champion Service Sector Scheme:

The Union Cabinet on 28th February, 2018 approved the proposal of the Department of Commerce to give focused attention to 12 identified Champion Services Sectors for promoting their development & realizing their potential, particularly from the point of view of promoting export. This umbrella scheme titled 'Champion Services Sector Scheme (CSSS)' is a Central Sector Scheme of the Department of Commerce. 'Communication Services' has been identified as one of these Champion Services Sectors and the Ministry of Communications has been identified as its Nodal Ministry. The Cabinet mandated concerned nodal Ministries/ Departments to finalize their respective Action Plans for their concerned sectors. The Union Government also approved creation of a dedicated fund of ₹5000 crore to enable expedited approvals for funding, as required, of sectoral initiatives of the identified Champion Services sectors. Accordingly, under Champion Services Sector Scheme (CSSS), the Department of Telecommunications (DoT) proposed following 2 sub-schemes (with total financial outlay of ₹150.2 crore) to Department of Commerce:

a. **Brand-building of India as Telecom Manufacturing and Services Destination:** Participation in important international events and brand building of India thereof, will enhance export of telecom equipments/ services, as well as attract foreign OEM and Generic Component players to set up manufacturing base in India.

b. **Setting up of Digital Communication Innovation Square (DCIS):** The initiative will also promote indigenous innovation and incubation of future technologies and their deployment/ manufacturing thereof, for the Indian communication services sector.

2.4 OTHER IMPORTANT INITIATIVES

Standards-R&D-Innovation (S-R-I)

Standards-R&D-Innovation (S-R-I) division was established in June 2019 with the objective to enable enhanced and focused engagement in Technical Standardization, R&D and Innovation with stakeholders in the domain of Digital Communication Technologies (DCTs) to forward the objectives of NDCP 2018. The activities carried out by the division during 2020-21, up to 31st December 2020, are as follows.

a) **Supply base Assessment - Preference to Make in India-Public Procurement (PMI-PP)**: To evaluate the sufficiency of Local Capacity and Competition of different Telecom Products under Preference to Make in India-Public Procurement Policy, the S-R-I division conducted a comprehensive study, interacted with more than 80 telecom companies, and collected the data to have a holistic view about the India's manufacturing ecosystem in the Telecom Sector. During this exercise, data was collected and analyzed for about 153 telecom products and works to assess

sufficient local capacity and competition in India. The exercise involved over ten consultations guided under Member (Technology) with industry, CPSUs, Associations, and internal divisions.

b) **Newsletter- Technology DoTs:** The division continued to successfully publish "Technology DoTs", e-Newsletter in April, June, September and December 2020 which provided a glimpse of technology landscape in Digital Communications. It is envisaged to provide a holistic view about the homegrown tech companies, Standardization, Global news, newly launched telecom products, various initiatives taken by Government etc. The information is collected from various Standardization bodies. Technology platforms, Startups, Innovators and organizations working in Telecom domain.

c) **Spectrum matters for CoS meetings etc.:** In line with the outcomes of Committee of Secretaries (CoS) meetings, the division carried out interactions with government agencies to explore potential options of re-farming, coexistence and carving out new bands for 5G and emerging technologies with an objective to enhance the efficient use of spectrum. Significant groundwork has been achieved in studying global practices, pending issues, current deployments and technologies.

d) **Industry engagement on experimental spectrum:** S-R-I division is facilitating the industry in obtaining the experimental spectrum for R&D and test beds. Due to pending portal creation, WPC local offices are coordinated with to expedite the cases. The S-R-I team contributed to the development of flow schematic regarding Registration and Payment on BharatKosh Portal regarding obtaining the spectrum under Experimental & Technology Trials/ Demonstration Licenses.

e) **ITU-RDF with TSDSI webinar series**: The division made a presentation at ITU-Regional Development Forum (RDF) on 4th November, 2020 on innovative initiatives under Digital India program along with TSDSI. In consultation with the office of Regional Director, Bangkok and S-R-I division, the TSDSI is working on potential topics for a webinar series on "Innovation Centric ICT Projects/Programmes". This webinar series will be hosted by TSDSI in the year 2021, through ITU Regional Office Bangkok. In this regard, a few interactive sessions were held with ITU teams with the objective to present innovation in various projects driven in India by both public and private sector and its outcomes.

f) **TSDSI engagement on RIT (LMLC), Standardization:** The division facilitated TSDSI to submit TSDSI's GCS (Global Core Specifications) for its Radio Interface Technology (RIT) standard on Low Mobility Large Cell (LMLC) to International Telecommunication Union (ITU) in WP5D meetings. LMLC Standard is envisaged to provide cost effective 5G connectivity in rural, remote and inaccessible areas and in turn would also help homegrown telecom industry ecosystem in the country. This is strategically important for India to transform Indian market from user to developer, producer, exporter and contributor in the field of telecommunications and its standardization.

g) **Spectrum Sandbox for Wireless Product Testing:** Along with policy division, the S-R-I division facilitated the development of spectrum sandbox model to enable R&D and Experimentation in wireless technologies in unused, unallocated, unsold and also in licensed spectrum bands.

Currently, there is a challenge of outdoor testing for the homegrown industry in hardening the products in licensed bands, that requires outdoor trials for longer periods. The spectrum sandbox model is envisaged to enable outdoor testing in multiple test locations in the cases of unused, unallocated, unsold bands at various academic and government institutions. Further, it also facilitates establishment of spectrum test zones in rural and remote areas for licensed bands as well. The model is under consideration.

2.5 HARNESSING EMERGING TECHNOLOGIES

2.5.1 Networks & Technologies

a) Indigenous 5G Test Bed:

DoT approved financial grant for the multi-institute collaborative project to set up 'Indigenous 5G Test Bed' in India in collaboration with IIT Madras, IIT Delhi, IIT Hyderabad, IIT Bombay, IIT Kanpur, IISc Bangalore, Society for Applied Microwave Electronics Engineering & Research (SAMEER) and Centre of Excellence in Wireless Technology (CEWiT). The project is likely to enhance national capability in telecom technology, develop indigenous IP and give fillip to Indian telecom manufacturers.

The Test Bed is planned to be realized in stages over four versions. The initial two versions have been completed. The design of next version has started and significant progress has been made by the institutes in system, hardware and algorithm design.

The unexpected COVID-19 pandemic has adversely affected the progress of the project and the final version of the Test Bed is expected to be completed by October 2021.

b) Transition to the Next Generation of Internet Protocol

Internet Protocol addresses, or IP addresses, are a core part of how the Internet operates. Every device needs an IP address to connect to the Internet and communicate with other computers, networks and devices. Internet Protocol version 6 (IPv6) is the next generation of the Internet protocol. It was developed to succeed version 4 (IPv4) as IPv4 addresses have almost run out globally.

Department of Telecommunications (DoT), being the nodal department for IPv6 transition in the country, has been constantly working with all stakeholders including ISPs/ States/ UTs/ Central Ministries/ Departments for smooth transition to IPv6.

As a result of initiatives undertaken by DoT, significant progress has been made in IPv6 transition. As per Asia Pacific Network Information Centre (APNIC) report as on 10th November, 2020 India stands at 2nd position (out of more than 250 countries) with IPv6 use ratio at 70.47%.

2.5.2 Access Services

(i) Short codes are issued by DoT and are used by different sections of the society. The short codes which are used for various sections of the society issued this year:

a) The short Code '14420' is issued by DoT as Helpline number to Ministry of Housing and Urban Affairs for enabling citizens to register any complaints regarding unsafe practices being adopted for cleaning and maintenance of septic tanks and sewers.

b) The short Code '14588' is issued by DoT to National Health Authority as helpline to the beneficiaries of Central Health Schemes like CGHS, CAPF & ESI schemes.

c) The short Code '14499' is issued by DoT to Government of Karnataka as Integrated Child Protection Scheme helpline for Tele-counselling to children in mental health distress due to Corona pandemic.

d) The short Code '14567' is issued by DoT as National Helpline for Senior Citizens to Department of Social Justice and Empowerment.

e) The short Code '14477' is issued by DoT as helpline number to National Health Authority for implementing the National Digital Health Mission (NDHM) to develop the India's digital health ecosystem which will connect citizens, doctors, and health facilities.

f) The short Code '14566 is issued by DoT to Department of Social Justice and Empowerment to set up a National Helpline to against Atrocities on the members of Scheduled caste and Scheduled Tribe and generation of awareness about the Protection of Civil Rights (PCR) Act, 1955, the Prevention of Atrocities (POA) Act, 1989.

g) The short Code '14499' is issued by DoT to Forest and Environment Department, Government of Gujarat as a helpline named 'Corona Santvana' to treat patients who suffer from insomnia, depression and other mental elements due to Corona which may be used by public requiring counselling services for treatment by physiatrists employed by Ahmedabad Municipal Corporation

h) The short Code '14445' is issued by DoT as helpline number to Central Project Management Unit (CPMU) to be utilized for dealing with the grievances/distress calls of beneficiaries, feedback beside information dissemination and awareness generation activities specifically under One Nation One Ration Card plan across the country to resolve the grievance. The call centers will be located in the States/ UTs and a common helpline number would be implemented for One Nation One Ration Card plan.

i) The short Code '14488' is issued by DoT to Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Government of India for starting an All India Call Centre for coordination between States for inter State movement of perishables - vegetables, fruits, inputs like seeds, pesticides and fertilizers etc. amidst prevailing situation of COVID-19 pandemic.

(ii) DoT has issued instructions modifying the dialing pattern by prefixing '0' from all fixed line numbers to cellular mobile numbers from 15th January, 2021. This will be done by providing '0' dialing facility to all fixed line subscribers. There will be no change in dialing plan from fixed to fixed, mobile to fixed and mobile to mobile calls. This will free up sufficient numbering resources

and more number of connections can be added in future which will be beneficial to the mobile customers at large. These changes have been done in order to have minimum inconvenience to the subscribers and freeing up essential numbering resources.

(iii) **Introduction of Aadhaar based e-KYC process as an alternate process for issuing mobile connections to Individual customers including Outstation customers and Bulk connections**: Subsequent to amendment to the section 4 of the Indian Telegraphy Act, 1885 on 24.07.2019, instructions have been issued on 29.09.2020 on "Use of 'Aadhaar number/ Virtual-ID' e-KYC service of Unique Identity Authority of India (UIDAI) as an alternate process for issuing mobile connections to Individual customers including Outstation customers and Bulk connections."

(iv) **Distinction between Procedural & Substantive lapses w.r.t. CAF verification guidelines**: Instructions dated 19.06.2020 have been issued on "Distinction between Procedural & Substantive lapses w.r.t. CAF verification guidelines".

(v) **Alternate Digital KYC (D-KYC) process in case of Bulk mobile connections category**: Instructions for alternate Digital KYC (D-KYC) process for issuing new mobile connections in case of Bulk mobile connections category have been issued on 18.09.2020.

(vi) **Extension of pre-paid mobile services in J&K, North East and Assam Service Areas**: Vide letter dated 31.03.2020, Pre-paid mobile services in J&K, Assam and North East service areas is operational on continuous basis w.e.f. 01.04.2020 subject to condition that the existing subscriber verification conditions, security conditions/ safeguards, penal provisions etc. stipulated by the Licensor/Government shall continue to remain in force.

(vii) **Temporary Suspension of Telecom Services (Amendment) Rules, 2020**: In light of the Hon'ble Supreme Court judgment and in consultation with all stakeholders, Temporary Suspension of Telecom Services (Public Emergency & Public Safety) Rules, 2017 has been amended vide Gazette Notification dated 10.11.2020 and has been issued by DoT vide O.M dated 10.11.2020.

(viii) **Provision of connectivity from different TSPs in an EPABX owned and operated by a VNO (Virtual Network Operator):**

In order to facilitate the connectivity from multiple TSPs in an EPABX owned and operated by a VNO (Virtual Network Operator) Access Service Category 'B' Licensee, amendment in UL (VNO) guidelines and licenses has been issued.

(ix) **Norms for Network Testing before Launch of Commercial Services:**

Network testing is required when a new service provider starts services or an existing service provider adopts new technology. Based on the TRAI recommendations issued on "Network Testing Before Launch of Commercial Services", Department of Telecommunications prescribed norms for Network Testing which facilitates time limit of 90 days for testing and a provision for extension till 180 days. Subsequently, norms for extension beyond 90 days have also been prescribed by DoT on 19.10.2020. These norms facilitate extension to be granted only on the conditions that:

- New technology is under testing and requires more time to conclude.
- Quality of service (QOS) not achieved during testing as per TRAI norms.
- Network modifications have been made during initial testing period of 90 days.

Similarly, on 22.04.2020, TRAI issued its recommendations on Network testing before commercial launch of services for Wireline Access Services. Department of Telecommunications is in the process of issuing norms for Wireline Access Services also.

2.6 GRANT OF LICENSES

2.6.1 Internet and Broadband Services

(a) Decentralization of ISP License Signing Activities to Field Units

Internet Service Provider (ISP) Licensing started in 1998, then single license in 2007, and Unified License (UL) in 2013. Companies were required to come from different parts of the country to DoT HQ in Delhi for signing the license agreement. As part of Ease of Doing business, license signing activities were decentralized to field units of DoT(LSAs) w.e.f. 20.07.2020. A total of 160 ISP authorisations under UL(VNO) have been signed in DoT field offices from 20.07.2020 to 31.12.2020.

Tamil Nadu

Mizoram

Andhra Pradesh

Bihar

Odisha

(b) ISP Authorizations Granted Under Unified License and Unified License (VNO)

As per guidelines for grant of Unified License dated 19.08.2013, the internet services have been included in the Unified License. Accordingly, with effect from 19.08.2013, Unified License with ISP authorization is granted for provision of internet services.

Further, as per guidelines for grant of Unified License (Virtual Network Operators) dated 31.05.2016 and its amendments, the internet services have been included in the Unified License (VNO). Accordingly, with effect from 31.05.2016, Unified License (VNO) with ISP authorization is granted for provision of internet services.

As on 31.12.2020, there are 324 Unified Licenses (VNO) have been issued with ISP authorization which include 30 Category "A" authorizations, 241 Category "B" authorizations and 53 Category "C" authorizations.

As on 31.12.2020, 1670 Unified Licenses have been issued with ISP authorization for various Categories. This includes 60 Category "A" ISP authorization, 562 Category "B" ISP authorization, 1048 Category "C" ISP authorization.

2.6.2 Satellite Services

Satellite communication is increasingly playing an important and pivotal role in connecting the unconnected areas and bridging the digital divide. It is going to bring transformative improvements in the areas of transport, logistics, agriculture, forestry, disaster management, telemedicine, and tele-education, etc. Further, India's hopes to be at the forefront in an increasingly digital future by harnessing frontier technologies such as artificial intelligence (AI), robotics, and augmented reality/virtual reality (AR/VR) ride on ubiquitous, robust and multi-modal connectivity using satellite based communications network especially for far flung, non-accessible and difficult terrain areas.

Satellite Division grants the licences for following services:

- **VSAT Services**
- **GMPCS**
- **INSAT-MSSR Services**

VSAT service Licences are granted on non-exclusive basis for Very Small Aperture Terminal (VSAT) service using INSAT satellite system within the territorial boundaries of India. Under the VSAT licence, the Licensees provide data connectivity within CUG amongst various sites scattered throughout India using VSATs and central hub. There are two categories of VSAT licences:

- ✓ VSAT CUG service authorization under Unified Licence wherein the licensee company can provide VSAT CUG service to users on commercial basis. As on 31st October, 2020, there are 9 Licences for providing commercial VSAT services. In addition, four VNO licences for commercial VSAT services licences have also been issued.
- ✓ Captive CUG VSAT Licence wherein the licensee company can set up VSAT network for its internal use only. As on 31st October, 2020, there are 24 captive CUG VSAT networks.

Global Mobile Personal Communication by Satellite (GMPCS): The Licensee may provide all types of mobile services including voice and non-voice messages, data services.

The Department of Telecommunications (DoT) has granted a licence under sui-genesis category to BSNL for "Provision & operation of Satellite based services using gateway installed in India". BSNL has installed the Gateway at Ghaziabad and started giving Global Satellite Phone Service (GSPS) w.e.f. 24.05.2017.

INSAT-MSSR Services: The scope of service is to provide INSAT- Mobile Satellite System Reporting service, which is a one-way Satellite based messaging service available through INSAT. The basic nature of this service is to provide a reporting channel via Satellite to the group of people, who by virtue of their nature of work are operating from remote locations without any telecom facilities and need to send short textual message or short data occasionally to a central station.

A bird's eye view of connectivity of provided by Satellite Telecom Service Providers is as under:

Connecting the uncovered locations - As on 31/10/2020	
No. of Gram Panchayat connected	24,623
No. of Blocks HQ connected	298
No. of DSPT locations (connectivity to Defence Posts)	869
E-learning sites	2500
No. of backhauls for Village BTS connected on satellite for mobile services	196

Service related connectivity- As on 31/10/2020	
No. of ATM locations	1,09,074
No. of Oil Rigs locations	141
No. of Remote sensing/meteorological locations	134
Connectivity to railway coaches	2700
Details of connectivity under IFMC	58 aero-planes

2.6.3 Carrier Services

(a) **Voicemail/Audiotex/Unified Messaging Service:** License for Voicemail/Audiotex/Unified Messaging Service is issued for the Service Area of Short Distance Charging Area (SDCA). Under Audiotex technical specifications, Conferencing facility is also permitted as an optional additional feature. Presently, there is no entry fee or license fee for Voicemail/ Audiotex/ UMS Licensees. As on 30.11.2020, there are 69 Licenses in existence for providing Voicemail/ Audiotex/ Unified Messaging Service (UMS). These 69 licenses have been issued to 32 companies and is spread across 14 service areas. The Policy for this License is under revision after the receipt of the TRAI recommendations.

(b) **Public Mobile Radio Trunking Service (PMRTS):** PMRTS is a two-way land mobile service in which the users communicate among themselves through a pair of Radio frequencies out of a pool in a designated frequency band, assigned to the system. This license is used to provide Public Mobile Radio Trunking Service on commercial basis. PMRTS license comes under Unified license since 01.08.2013 and is being issued for commercial use. Service area for PMRTS is Metro or Circle-wise. As on 30.11.2020, there are 41 PMRTS licenses in existence providing PMRTS service in the country.

(c) **Captive Mobile Radio Trunking Service (CMRTS):** CMRTS is similar to PMRTS service, and the only difference is that it is used for captive purpose, unlike to PMRTS which is used on commercial basis. CMRTS license is not covered under Unified license, and issued by DoT for Captive use only to the agencies/ companies like police, metro rail service etc. Service area for CMRTS is Metro/ city/specific area/location. As on 30.11.2020, there are 111 CMRTS licenses in existence to provide CMRTS service.

(d) **No Objection Certificate (NOC) for sale/ rent of International SIM cards/SIM cards/ Global calling cards of foreign operators in India:** Department of Telecommunications issues No Objection Certificate (NOC) for sale/rent of International Roaming SIM Cards / Global Calling Cards in India to the applicant company. Such cards are useful for the travelers, who are going abroad for short periods and wish to use country specific SIM Card in the visited country. As on 30.11.2020, there are 25 NOC holders at present providing this service. The Policy for issue of No Objection Certificate (NOC) for sale/rent of International Roaming SIM Cards/ Global Calling Cards in India is under revision after the receipt of the TRAI recommendations.

(e) **Launch of National EMF Portal:** On 02-05-2017, Department of Telecommunications (DoT) has launched Tarang Sanchar, a web portal for Information sharing on Mobile Towers and EMF Emission Compliances, with a view to generate confidence and conviction with regard to safety and harmlessness from mobile towers, clearing any myths and misconceptions. The portal can be accessed at www.tarangsanchar.gov.in. The EMF Portal provides a public interface where an easy map-based search feature has been provided for viewing the mobile towers in vicinity of any locality. By click of a button, information on EMF compliance status of mobile towers can be accessed. Detailed information about any tower site, if requested, will be sent on email to the users. Additionally, any person can request for EMF emission measurement at a location by paying a nominal fee of Rs 4000/- online. Local License Service Area (LSA) field unit of DoT will conduct the test (the requestor can be present, if he so desires) and the test reports will be provided. The portal also has 'EMF Overview' and 'Learn' Sections, which provide numerous articles, booklets and videos, to further educate the citizens about EMF and coverage of telecom services. Public can also access the 'DoT Initiatives'section which has leaflets, articles and Frequently Asked Questions. The portal has the complete collated technical details of over 22 lakh base stations (BTSs) spread across the country of all technologies (2G, 3G, 4G etc.) and of all Telecom Service Providers (TSPs).

(f) **Public Awareness Programs on EMF emission issue:** Department of Telecommunications (DoT) has initiated a nation-wide Awareness Programme on EMF Emissions & Telecom Towers to build a direct bridge of engagement between different stakeholders and to fill the information gap with scientific evidence. Six such programmes held in Dehradun on 30 June, 2016, in Hyderabad on 13 July, 2016, in Mumbai on 23 August, 2016, in Chandigarh on 21 October, 2016 in Jaipur on 17 December, 2016 and in Guwahati on 24 January, 2017, helped in bringing lot of clarity on this issue and were appreciated by all participants including the Chief Secretaries of Uttarakhand, Telangana, Maharashtra, Punjab, Haryana, Rajasthan and Assam, Senior Officers of State Governments and representatives of local bodies & RWAs. These Programmes have further been followed up at sub-state level by the License Service Area (LSA) field unit of DoT so that more and more people are made aware about the scientific facts on health effects of EMF emissions from mobile towers. Pamphlets/ Information Brochures on various topics related to EMF have also been published and distributed in various regional languages. These programs have helped in bringing lot of clarity on this issue and resulted in reduction of new court cases, public grievances and RTI on the related matters.

(g) **Licensing for National Long Distance (NLD) and International Long Distance (ILD) Service:** After announcing opening up of International Long Distance (ILD) Service in April 2002 and National Long Distance (NLD) Service in August 2002 for free competition, 27 ILD Licenses and 34 NLD Licenses have been issued. After the introduction of Unified Licensing Regime, the new Licenses to operate NLD & ILD services are being given as authorization under Unified License. Under Unified Licensing (UL) regime, in addition to above-mentioned licenses, 9 licensees have been authorized to offer ILD services and 15 licensees have been authorized to offer NLD services. The minimum net worth and minimum equity requirements for obtaining

NLD and ILD service authorization under Unified Licensing (UL) regime for the applicant company is Rs.2.50 crore each. Unified License (Virtual Network Operator) [UL (VNO] regime has also been introduced, under which NLD & ILD service authorization can be given. Till date, 4 NLD service authorisation under UL(VNO) and 1 ILD service authorisation under UL(VNO) have been issued

(h) Registration Certificate of Infrastructure Provider Category-I (IP-I): Under IP-I registration, company can provide assets such as Dark Fibres, Right of Way, Duct Space, Tower for the purpose to grant on lease/ rent/ sale basis to the licensees of Telecom Services licensed under Section 4 of Indian Telegraph Act, 1885 on mutually agreed terms and conditions. So far, 31.12.2020, 1089 companies have been registered as Infrastructure Provider Category-I.

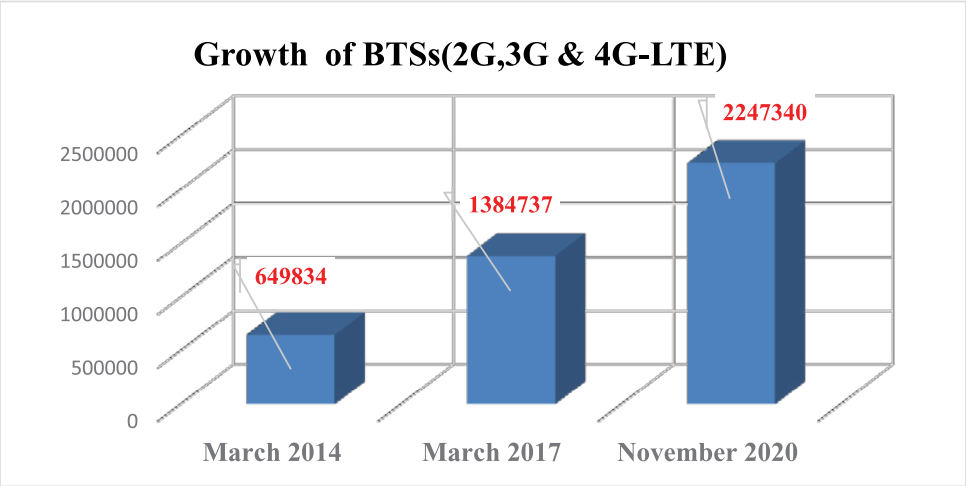
2.7 TELECOM INFRASTRUCTURE

(a) Service delivery in villages through BharatNet: For achieving the goal of Digital India programme, the Government is implementing the flagship BharatNet project in a phased manner to provide broadband connectivity to all the Gram Panchayats (approx. 2.5 lakh GPs) in the country. Under BharatNet project, around 1.50 lakh Gram Panchayats (GPs) have already been connected with high speed broadband connectivity which will help in providing various services in the rural areas. As on 31.12.2020, Wi-Fi hotspots have been installed in 1,00,000 GPs and about 5.0 Lakh Fibre to The Home(FTTH) broadband connections have been provided. In addition to Wi-Fi hotspots, the number of GPs taken on SWAN (State Wide Area Network) stands at 5330. The scope of BharatNet has now been enhanced to connect all 6 Lakh inhabited villages in the country as per the directive of Hon'ble Prime Minister as part of address to the nation on 15th August 2020. To leverage the potential and entrepreneurship of private sector, a major part of the roll out is being done through Public Private Partnership in 16 states covering approximately 3.5 lakh villages.

(b) Towers and BTS

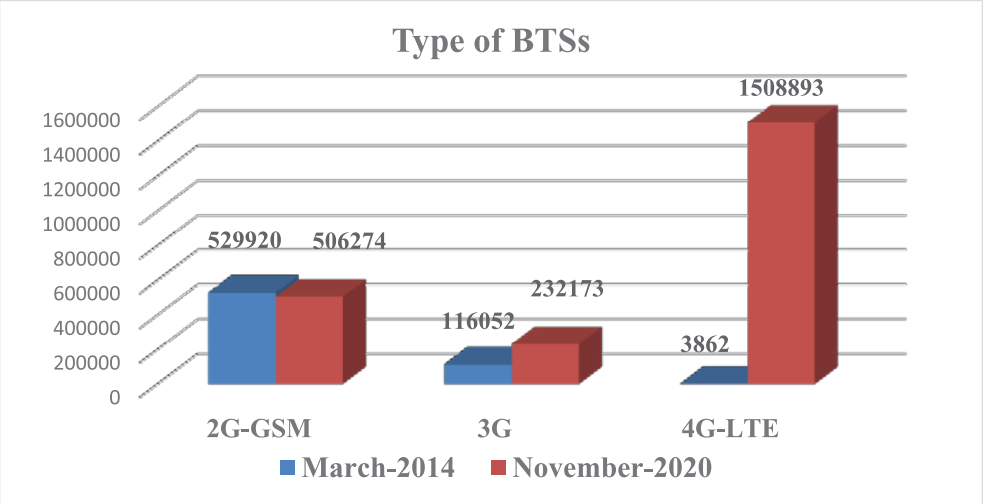
The Government has taken several policy initiatives to facilitate infrastructure growth which include permitting trading/sharing/ liberalization of spectrum, permitting passive & active infrastructure sharing, notification of Right of Way Rules 2016, making available government land/buildings for installations of towers, carrying out Electro Magnetic Field (EMF) awareness campaign to dispel the misgivings to the public regarding EMF radiations emission from mobile towers through print and electronic media etc. As a result, around 15.97 lakh additional Base Transceiver Stations (BTSs) for 2G/3G/4G-LTE services have been added by Telecom Service Providers (TSPs) during the period from March, 2014 (6.49 lakh BTS) to 30th November, 2020 (22.47 lakh BTS) and 2.15 lakh mobile towers have been added during the period from December, 2015 (4.15 lakh) to 30th November, 2020 (6.30 lakh mobile towers) across the country.

BTS Growth during 31st March 2014 to 30th November 2020



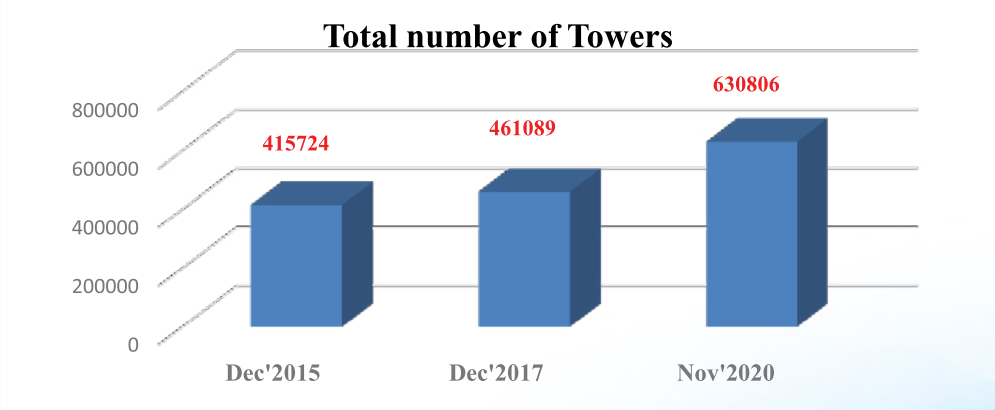
(*Source TARANG Sanchar Portal & CoAI)*

BTS Type (2G/3G/4G-LTE) status



(*Source TARANG Sanchar Portal & CoAI)*

Tower Growth during December 2015 to 30th November 2020



(*Source TARANG Sanchar Portal & CoAI)*

(c) Interactive Voice Response System (IVRS): In order to obtain direct feedback from subscribers, DoT has launched an Interactive Voice Response System (IVRS) since December 2016 wherein around 4.25 crore subscribers have been individually contacted out of which 59.53 lakh subscribers participated in the survey & 34.07 Lakh subscribers have reported call drops. The feedback is shared with the Telecom Service Providers (TSPs) every week for taking corrective actions in a time bound manner. As reported by TSPs, about 1.40 lakh individual cases of call drops resolved, 3.88 lakh issues other than call drops (billing, MNP, data, device, roaming etc.) & around 20.55 lakh temporary issues/no issue have been undertaken so far. Also around 7200 new BTSs are installed specifically to address IVRS complaints.

(d) Network for Spectrum (NFS) Project

The Cabinet Committee on Infrastructure (CCI) in its meeting held on 3rd December 2009 approved the alternate communication network for Defence services for release of spectrum. This network is being mainly implemented by Bharat Sanchar Nigam Limited (BSNL) and a small part of Delhi and Mumbai Air Force Network by Mahanagar Telephone Nigam Limited (MTNL). The exclusive & dedicated OFC based network was to be set up costing ₹9175.16 crore. This amount included ₹1077.16 crore for Air Force and ₹8098 crore for Army & Navy. As per CCI approval, the Air Force Network was to be completed by 30th June, 2010 and for Army & Navy to be completed by 31st December 2012. The Air Force Network has been dedicated to the Nation by Indian Air Force on 14th September 2010.

CCI in its meeting held on 3rd July 2012, has given the enhanced financial approval of ₹13,334 crore. Further, CCEA in its meeting held on 16th May 2018, has given the enhanced financial approval of ₹24,664 crore with the timeline of 24 months from the date of Cabinet approval.

NFS has been divided into ten components. These are as follows:

1. OFC for Army and Triservices (Around 60,000 km)
2. OFC for Navy (Around 3,000 km)
3. Dense Wavelength Division Multiplexing (DWDM)
4. Geographical Information System based OFC Network Management System (GOFNMS)
5. Microwave
6. Satellite
7. Multi Capacity Encryption Units (MCEU)
8. IP-MPLS (Internet Protocol – Multi Protocol Label Switching) (Navy)
9. IP-MPLS (Army)
10. Unified Network Management system (UNMS)

Purchase Order has been placed by BSNL for the all the components. Till date, nearly 96% of OFC has been laid. Supply, Installation, Testing and Commissioning (SITC) of all equipments is in full swing. Due to the highly complex nature of the project, difficulties/delays in receiving Right of Way from various agencies like NHAI, BRO, Railways, PWD, Forest, Wild Life, Municipal Corporations etc and limited working season in Ladakh/Arunachal/Sikkim, it was envisaged to complete the project by Dec 2020.

Due to COVID-19 pandemic, NFS Project is expected to be completed by June 2021.

2.8 MANAGEMENT OF COVID-19

(a) **COVID-19 Quarantine Alert System (CQAS):** For effective management of Covid19 pandemic Covid-19 Quarantine Alert System (CQAS) was developed in-house for monitoring and management of the quarantine geo-fence. Auto Emails / messages (SMS) are sent to State Government agencies, if any identified Corona +ve or quarantined person, moves away from his quarantined mobile tower area. As of now the system has been used by the Governments in 18 States and Union Territories. It has handled approx. 27 lakh targets (identified Covid +ve or quarantined person) and generated more than 18.30 crore quarantine breach alerts.

(b) **Covid-19 Savdhaan System:** During the initial few days of nation lockdown due to COVID-19 (March/ April 2020), DoT utilized for emergency use of 'SAAVDHAN' platform, developed by C-DOT to Geographically targeted messages were sent based on postal pin code or polygon using Common Alter Protocol (CAP). The platform was improvised with an interface to transmit critical and targeted messages through mobile using C-DOT platform by the users including State Government Departments and SDMAs. A Standard Operating Procedure 9SOP) was put in action through DoT field offices under DG (Telecom) and State Governments including SDMAs.

The platform delivered a total of 309 crore messages in 17 languages for 26 States and Union Territories till the end of November 2020. The messages included information on locations of hot zones, mitigation measures, tracing, public communication from the state authorities.

(c) **Arogya Setu IVRS**

The Government launched the Aarogya Setu Interactive Voice Response System (IVRS) developed by C-DOT, to cover feature phone and landline users. Initially only smartphone users were able to use the Arogya Setu application and get updates on whether they have unknowingly come in contact with a COVID-19 positive person and can contract the virus.

The IVRS service is available across India. This is a toll-free service, where a feature phone and landline user will need to give a missed call to the number 1921 and will get a call back requesting for inputs regarding their health. The questions asked are aligned with Aarogya Setu app, and based on the responses given by the person. The person will get an SMS indicating their health status and alerts. The service is now available in 11 regional languages just like the mobile application.

CHAPTER 3

International Relations and Cooperation

Telecommunications by definition cuts across borders of different countries. Active participation and cooperation in this area is critical keeping in view the technology intensive nature of this sector. Accordingly, India has been proactively participating in Multilateral and bilateral forums. Similarly, India has also been cooperating with different countries and industry and professional bodies in this area.

3.1 INTERNATIONAL RELATIONS

There were significant activities in bilateral cooperation as well as multilateral cooperation with Intergovernmental Organizations such as International Telecommunication Union (ITU), Asia-Pacific Telecommunity (APT), and International Telecommunications Satellite Organization (ITSO) etc. Bilateral relations and technological cooperation were strengthened. The activities on International Relations front are summarised as below:

a. Bilateral Cooperation

b. Activities on Multilateral Cooperation and Conferences of Inter-governmental and International Organizations

c. Study Group Meetings and Conferences

d. Trainings

3.1.1 Bilateral Cooperation:

(i) **MoU with Myanmar:** MoU on Cooperation in the field of Communications was signed between the Ministry of Communications of the Republic of India and the Ministry of Transport and Communications of the Republic of the Union of Myanmar on 27.02.2020.

(ii) **Cabinet approval of MoU with Japan:** A Memorandum of Understanding between the Ministry of Communications of Republic of India and the Ministry of Internal Affairs and Communications of Japan on bilateral cooperation between India and Japan in the field of ICT has been finalised.

(iii) **Cabinet approval of MoU with UK:** A Memorandum of Understanding between the Department of Telecommunications of Republic of India and the Department of Digital, Culture, Media and Sports (DCMS) of United Kingdom Government on cooperation in the field of Telecommunications/ICTs has been finalised.

(iv) **CYber Defense Exercises with Recurrence (CYDER) training:** CYDER training under the Joint Working Group of India and Japan was held during 4-5 March 2020 at TEC, Delhi. Participants from DoT and various ministries of Govt. of India attended the training.

(v) **6th India Japan JWG meeting on virtual platform**: On December 8, 2020, the Sixth India-Japan Joint Working Group Meeting under India-Japan ICT Comprehensive Cooperation Framework was held on virtual platform between the Ministry of Communications of India and the Ministry of Internal Affairs and Communications of Japan. The meeting was inaugurated by Shri Anshu Prakash, Secretary, DoT and was jointly chaired by Mr. K. Ramchand, Member(T), DoT and Mr. YOSHIDA Mabito, Vice-Minister for Policy Coordination (International Affairs) MIC, Japan. Secretary (T), DoT congratulated both sides on their efforts to strengthen and deepen cooperation in ICTs sphere. He emphasized the long friendship and ties between both the countries and hoped continuing this friendship and spirit of cooperation in the field of ICTs. Member (T), DoT welcomed all the distinguished members and acknowledged active participation of all the stakeholders in the 6th edition of India-Japan JWG. Encouraged by the commitment from Japanese Government to have a consistent engagement in ICT cooperation, he hoped to build upon the efforts made by the 5th JWG. Cooperation between both the sides was sought on Standardization in the 5G, and other emerging fields such as Internet of Things (IoTs), M2M, Artificial Intelligence / Block Chain, Identifying use cases of 5G in Health Care, Agriculture and Water management, Smart City Development involving Startups & SMEs, Telecom Security and establishment of Trust Centre for IoTs, Submarine cable systems for remote Islands, High Altitude Platform Stations (HAPS) for unconnected areas & Disaster Management and Public Protection and Disaster Relief (PPDR), ICTs capacity building through collaboration with Centers of Excellence like NTIPRIT, Spectrum Management and Joint Research Studies, Cooperation on Multilateral platforms like ITU etc, for common goals.

3.1.2 Multilateral Cooperation:

(i) **Visit of DoT delegation, led by Secretary (Telecom) to participate in Expert Group Meeting to discuss the draft concept and framework of ICT Development Index and to have meetings with Director (BDT), ITU during 10-11 February, 2020 at Geneva, Switzerland.:** A DoT delegation, led by Shri Anshu Prakash, Secretary (Telecom), participated in the Expert Group Meeting on ICT Development Index (IDI). ITU had informed that for 2019, the ITU Secretariat recommends to publish the IDI based on the original methodology and set of indicators. A process would be launched to develop a new index for 2020, which will include a wider consultation with relevant experts from ITU members, the global statistical community, academic institutions, and the Partnership on Measuring ICTs for Development. During the meeting, Intervention was made by Secretary (Telecom) covering all the aspects of the IDI and proposed framework so that the correct picture of India's aspiration and developments in the field of telecommunications/ ICT may be reflected in IDI. During the visit, the delegation had important meetings with various ITU Officials, viz, Secretary General, Deputy Secretary General, Director (BDT), Director (TSB) and officials of ITU-R sectors in view of the long term engagements with ITU. During these individual meetings, discussions were held and India's

views were conveyed on IDI related matters, Host Country Agreement (HCA) for establishment of ITU Area Office in India, preparations of hosting of WTSA at Hyderabad, India, hosting of ITU-R Working Party 5D Meeting in India in October 2020, support on India's proposal on LMLC (Low Mobility Large Cells) technology during the upcoming meetings of WP5D. The main objective of these meetings were aimed at taking forward India's initiative to enter into the next level of global standards making landscape which is strategically important for India to transform Indian Market from a user to developer, producer, exporter, innovator and contributor in the field of telecommunications.

(ii) **6th BRICS Communication Ministers Meeting on 17-09-2020 (Virtual):** Shri Sanjay Dhotre, Minister of State for Communications, Electronics & Information Technology and Education, Government of India participated in the meeting on behalf of India during the sixth BRICS Communication Ministers Meeting held on 17th September 2020 in virtual format. In the meeting a broad consensus was built to continue cooperation among BRICS Countries on important areas such as, the role of Information and Communication Technologies in the fight against COVID-19, building trust and security in the use of ICTs, children online protection, granting the access and connectivity of people living in rural areas, as well as groups of persons with disabilities and the role of the digital economy in achieving Sustainable Development Goals.

Hon'ble Minister of State for Communications appreciated, the field workforce and the managers of telecom networks who worked as Covid-19 warriors. The Minister also highlighted various initiatives takem by Indian Government for Covid Management, such as, AarogyaSetu App, Covid Quarantine Alert System (CQAS), CovidSavdhan, ICT solutions to facilitate movement of migrant workers back to their homes, In-house development of affordable Video Conferencing Solutions to facilitate work from home and learn from home.

(iii) **The WSIS Forum 2020, 7-10 September 2020:** Secretary (Telecom), participated in the online World Summit on Information Society (WSIS) Forum 2020 event during 7-10 September 2020 and made high level policy statement on behalf of India.

(iv) **Development of UN Navigation App and successful demonstration of Proof of Concept (PoC) at United Nations Office at Geneva (UNOG):** A DoT delegation along with C-DOT team successfully demonstrated Proof of Concept of UN Navigation App at UNOG during Feb-March 2020. Secretary (T), also met DG, UNOG and held discussions regarding the project implementation.

(v) **17th World Telecommunication/ICT Indicators Symposium (WTIS-20)**: Secretary(T), DoT chaired and addressed the Opening and Closing Sessions, of the 17th World Telecom Indicators Symposium which took place online from 1 to 3 December 2020. The theme of the symposium was "towards an inclusive Digital Society". In the address the

role of inclusive digital society amid Global Pandemic faced today was highlighted. Further, active collaboration and partnership, with business, academia, scientists, innovators and the civil society towards this endeavor was sought. Secretary(T) emphasized that ICT indicators are an important tool, to measure and monitor progress, identify actionable items and guide policies to be formulated and adopted for transiting to a digital society. He thanked and congratulated the leadership of ITU for taking forward the positive outcomes of different Sectors of ITU activities in the world and for making the consistent efforts towards global developments of ICTs and meeting of SDGs-2030 objectives.

(vi) EGTI and EGH Meeting: A meeting of Expert Group on Telecommunications Indicators (EGTI) and Expert Group on Households Indicators (EGHI) was held from 14-17 September 2020 through video conferencing. The meeting was attended by delegates from India namely DDG(IR), Economic Adviser DoT, Director(P&M), DoT and Director(IR). Indian delegation put forth India's point of view regarding proposed framework of ICT Development Index.

(vii) Network Readiness Index: A meeting of Secretary DoT Mr Anshu Prakash with Dr Soumitra Dutta, Co-founder of Portulans Institute Washington D.C. and publisher of Network Readiness Index was held on 30th December 2020 at New Delhi. Discussion was held on the progress made by India in ICT sector over years and how it can be captured in the framework of Network Readiness Index.

3.1.3 Study Group Meetings and Conferences:

The ITU study group meetings are aimed to build capacity and contribute for harmonizing standards, share best practices and learning's for ICT growth. The issues discussed in these meetings are important for India to develop the ICT eco system and understand the challenges. The DoT delegation participated

in the following Study Group meetings and conferences in different sectors:

i. ITU-T Study Group-15 Meeting

ii. CTO Audit and Finance committee

iii. 5th meeting of TSAG

iv. ITU-D SG01 meeting

v. ITU-D Study Group 02 Meeting

vi. ITU-T Study Group-11 Meeting

vii. Virtual Consultation of ITU Council meeting

viii. ITSO meeting

3.1.4 Trainings:

Coordination with ITU Centre of Excellence (CoE), Indian Technical and Economic Cooperation (ITEC) programmes and APT trainings were successfully carried out during the year. Officers from DoT participated in the capacity building programmes abroad/Online organized by the International organisation such as ITU, APT in the following areas:

(i) Japan SAARC Network Programme

(ii) APT training course on Cybersecurity Technologies

(iii) APT training course on policy development of high level officials

(iv) APT Training Course on Organizing International Conference(Online)

(v) APT Training Course on "State of Computing in 5G Network and IoT Analytics. (Online)

3.2 INTERNATIONAL COOPERATION

The International Cooperation Division of the Department of Telecommunications deals with activities of prime importance relating to WTO negotiations, bilateral and multilateral trade and economic agreements relating to telecommunications, implementation of 5G High Level Forum recommendations, coordination with Telecom Equipment and Services Export Promotion Council (TEPC); and Telecommunications Standards Development Society of India (TSDSI), administration of Telecom Centres of Excellence (TCOE India), hosting of Exhibitions/Conferences and seminars relating to telecom.

(i) Setting up of 5G Use Case Labs

DoT is working with different Ministries/Departments for setting up of India Specific Use Case Labs in Education, Healthcare, Agriculture, Public Safety, FinTech etc. Department of Telecommunications (DoT) has approved proposal for setting up of 5G Use Case Labs in Banking, Financial Services and Insurance (BFSI) at Institute of Development and Research in Banking Technology (IDRBT), an

Institute under RBI, at Hyderabad with a proposed funding requirement of Rs. 22 crores for a period of 3 years. IDRBT has started working with banks and industry for development of Use Cases in banking services.

(ii) India Mobile Congress 2020

Department of Telecommunications (DoT) along with Cellular Operators Association of India (COAI) and other stakeholders organized for the fourth year India Mobile Congress 2020 (IMC 2020). Owing to COVID pandemic, this edition of India Mobile Congress was a virtual event, scheduled from 8th December through 10th December 2020, with the theme "**Inclusive Innovations - Smart, Secure, Sustainable**". According to COAI, IMC 2020 had 27,213 visitors, national and international delegates, over 170 partners & exhibitors, over 30 start-ups and more than 196 speakers. The conference had 31 keynote sessions, 18 panel discussions and 12 fireside chats, 72 hours of content and more than 1.16 billion media impressions spanning three days.

The event was inaugurated by the Hon'ble Prime Minister of India, Shri Narendra Modi and attended by various esteemed government and industry leaders. These included the Hon'ble Minister for Communications, Shri Ravi Shankar Prasad, Hon'ble Minister of State for Communications, Education and Electronics & Information Technology, Shri Sanjay Dhotre, and the Secretary (Telecom) & Chairman DCC, Department of Telecommunications, Shri Anshu Prakash,

Indian Mobile Congress (IMC) 2020

IMC 2020 saw the participation of telecom giants, OEMs, system integrators, technology experts, industry analysts, government officials, young professionals, start-ups and students. The focus area for IMC 2020 was 5G and emerging technologies with more than 72 hours of pseudo-live content streamed over three days.

(iii) 5G Hackathon

The Department of Telecommunications launched "5G Hackathon" on 21st February 2020 in collaboration with MeitY, NITI Aayog, Start-up India and other stakeholders in order to identify & promote applications, relevant to India, in the 5G realm that will be developed into workable products and services.

The main objective of the "5G Hackathon" is to bring all the players together in the ecosystem such as tech companies, mobile operators, manufacturers, developers to work together and convert their ideas into workable products and services. Winners of the various phases of 5G Hackathon will share a total prize pool of ₹ 2.5 crore along with an opportunity to scale and implement their 5G applications to make them market ready with the support of leading Telcos/OEMs.

During phase 1 of 5G Hachkathon, 100 best ideas have been selected in different categories like Healthcare, Education & Governance, Banking, Finance and Insurance/ Cyber Security/ Enterprise transformation, Industry 4.0, Agritech & Livestock and Smart cities & Infrastructure etc. These 100 selected applicants will be awarded with prize money of Rs. 1.0 Lakh each. Thereafter the 5G Hackathon will enter into phase 2 where in these ideas will be converted into workable products and services under the mentorship of Industry and Academia and 30 best products will be selected for the Prize.

(iv) Telecom Centre of Excellence (TCOE) India

TCOE India has been created as a Public Private Partnership (PPP) initiative by the Department of Telecommunications, Government of India in 2007. The important activities of TCOE India during the year 2020-2021 are to strengthen the R&D ecosystem in ICT where Government works as a facilitator, Industry as the ultimate user, and Academia as the research unit. The brief of work done by them is as under:

a) **TCOE India as IMT2020 Evaluator:** TCOE India has signed up as an Independent Evaluation Group (IEG) for the evaluation of the candidate technologies for IMT2020 (5G). TCOE India has submitted Evaluation report to ITU evaluating TSDSI Radio Interface Technology (RIT) for consideration of ITU-R Working Party 5D. Three new technologies 3GPP 5G-SRIT and 3GPP 5G-RIT submitted by the Third Generation Partnership Project (3GPP) and '5Gi' submitted by the Telecommunications Standards Development Society India (TSDSI) have completed "successful evaluation" and conform with rigorous performance requirement, according to International Telecommunication Union (ITU).

b) **5G Hackathon:** TCOE India is also involved in the 5G Hackathon as an Execution Partner of Department of Telecommunications to identify the best India Specific Use Cases in 5G domain.

(v) Telecom Equipment and Services Export Promotion Council (TEPC)

Telecom Equipment and Services Export Promotion Council (TEPC) has been set up by the Government of India to promote and develop exports of telecom equipment and services from India.

TEPC Participation in Events during 2020-21

TEPC organized various structured promotional events so as to create awareness about the capability of Indian telecom products and services. In view of the emerging situation, on account of the adverse impact of COVID-19, there was not only a need to sustain the existing markets but also for offering Indian products and services as a potential alternative to the world market. Indian telecom stakeholders have explored the telecom markets in different countries virtually during the year 2020-21 as under.

a) **ConnecTechAsia 2020, Singapore, September 29, 2020- October 1, 2020** 10 companies participated in virtual India Pavilion in CommunicAsia 2020 under Champion Sector Scheme of Department of Telecommunications.

b) **AFRICACOM 2020, 10-12 November 2020, South Africa (Virtual Expo)**

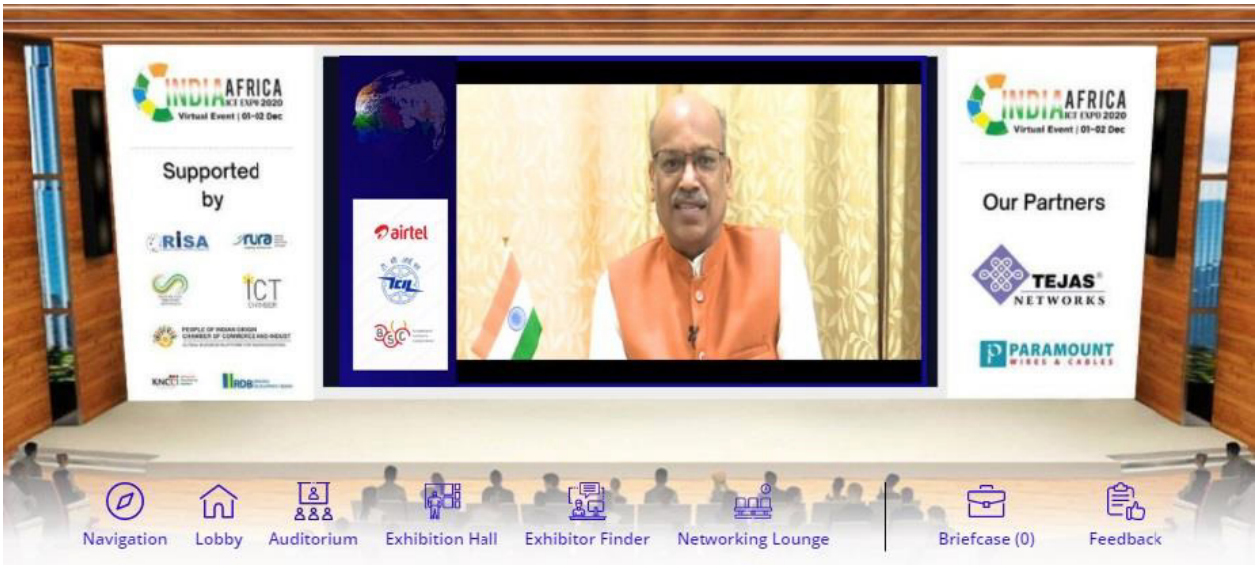
AfricaCom is the largest and most influential telecommunications event in Africa continent. The AfricaCom 2020 event provided the perfect setting for companies in front of Africa's leading Mobile Network Operators (MNO's) and technology companies. 15 companies participated in India Pavilion in Africacom 2020 under Champion Sector Scheme of Department of Telecommunications.

c) **INDIA AFRICA ICT EXPO 2020, 1- 2nd December 2020 (Virtual Expo)**

Africa continent continues to be one of the fastest growing one in ICT and there are several avenues for growth for the ICT sector – from e-commerce and e-services, mobile technologies, applications development, and automation to become a regional centre for the training of ICT professionals. The African region is an important trading territory for the Indian business community and the demand of Indian goods are increasing in the African continent.

To reiterate the relationship and commitment between India, Rwanda and other African countries, TEPC, with support of the Department of Telecommunications, Ministry of Communications, Government of India, hosted the 'India Africa ICT Expo & Conference' on December 1-2, 2020. The Ministry of ICT and Innovation, Government of Rwanda was co-host for the event. The event was supported by the Ministry of Industry & Trade of Rwanda, as well as RDB, RURA, RISA, ICT Chamber, NIRDA and RCB, all Government agencies working for the ICT sector playing a significant role in foreign investment and collaborations.

The event was inaugurated by Shri Sanjay Shamrao Dhotre, Hon'ble Minister for State for Communications, Education and Electronics & Information Technology, Government of India with Ms. Paula Ingabire, Hon'ble Minister of ICT and Innovation, Rwanda, Government of Rwanda as Guest of Honour. The event was graced by Shri Anshu Prakash, Secretary, Department of Telecommunications, Dr. Lacina Kone, Director General, Smart Africa Alliance and other senior officials from Ministry and industry leaders. 40+ companies participated in the event.



INDIA AFRICA ICT EXPO 2020, 1- 2nd December 2020 (Virtual Expo)

d) Make in India Pavilion in India Mobile Congress

TEPC organized Make in India Pavilion during India Mobile Congress 2020 from 8-10 December 2020. 70 companies participated in the event.

(vi) Telecommunications Standards Development Society, India (TSDSI)

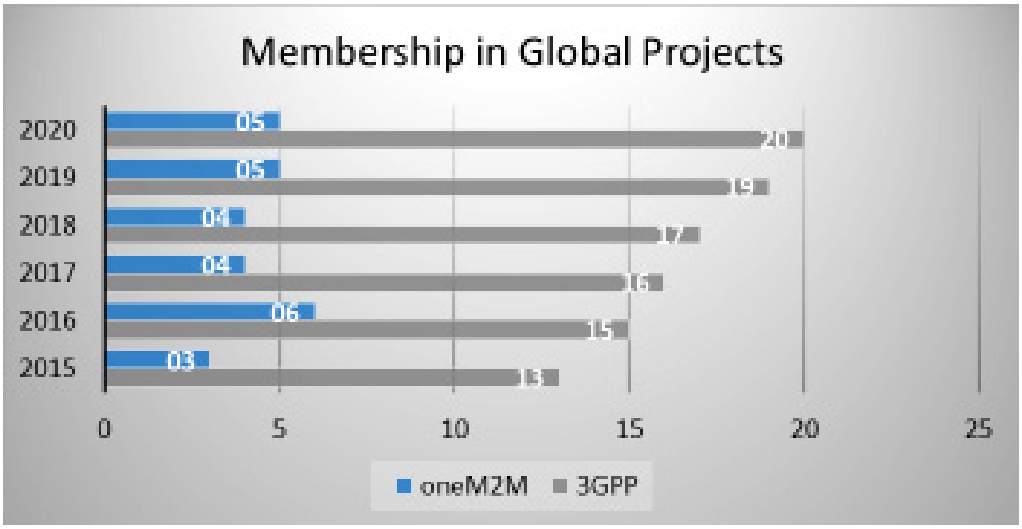
TSDSI was established as an autonomous body by Indian industry, Academia, Research entities and the Government of India to drive Telecom Standardization activities in India and project Indian interests in global forums.

TSDSI is a member of Global Standards Collaboration (GSC), a body comprising all global telecom standards development organizations (SDOs), an Organizational partner of third Generation Partnership Project (3GPP), which is driving next generation wireless standards (eg.5G), Partner Type 1 of oneM2M, an international partnership project working on creation of a standard M2M service layer framework and Members of ITU-R SG5 (Terrestrial Services) and ITU-T SG15 (Transport, Access and Home).

TSDSI at a Glance

Published Reports and Standards

Group	No. of Technical Reports Published	No. of Technical Standards Published
Study Group - Network	3	2,465
Study Group - Services & Solutions	82	136



Global Impact

TSDSI's 5G Radio Interface Technology "**5Gi**" was approved by SG5 of ITU-R as part of upcoming ITU-R Recommendation M.[IMT-2020.SPECS] in its meeting held on 23rd November 2020. 5Gi, the first ever Mobile Radio Interface Technology contribution from India to become part of ITU-R's IMT recommendation, went through a rigorous evaluation process of the ITU-R working groups over a period of 3 years before final approval stage. This standard is a major breakthrough for bridging the rural-urban digital divide in 5G deployment due to enhanced coverage.

Standardization Activities

TSDSI transposed standards on IMT Advanced (relevant to ITU-R M.2012-4 recommendations) and oneM2M Rel 2 adopted as National Standards by Telecom Engineering Centre (TEC), DoT.

CHAPTER 4

Offices and Field Organisations

The functions of attached, subordinate and field offices of the Department of Telecommunications are given in this chapter.

4.1 WIRELESS PLANNING AND COORDINATION

The Wireless Planning and Coordination Wing of DoT is the nodal authority for planning, regulation, coordination, authorization and management of radio frequency spectrum in the Country. International coordination for spectrum management and associated satellite orbit, including Geo-Stationery Satellite Orbit (GSO)/Non-Geo-Stationery Satellite Orbit (NGSO) are administered under the provisions of Indian Telegraph Act 1885 (13 of 1885) and Indian Wireless Telegraphy Act 1933, for Licensing radio communication systems. The Wireless Monitoring Organisation (WMO) functions under the Wireless Planning and Coordination wing of DoT. The major functions of WMO are derived from the Radio Regulation of the International Telecommunication Union including monitoring/measurement of Radio Spectrum usage, ensure interference free radio-communication environment in the country.

In view of the Government's policy on ease of doing business and making the licence process transparent, various licences issued by WPC Wing had been made online through the Saral Sanchar portal.

A. Initially under Phase-I, the following licences have been made online:

   i. Standing Advisory Committee on Frequency Allocation (SACFA)

   ii. Fixed/Land-Mobile-HF/VHF/UHF (Below 806 MHz)

   iii. Fixed/Land-Mobile-HF/VHF/UHF (Above 806 MHz)

   iv. Terrestrial Broadcast (FM/Community Radio Station/SW/MW/LPT/HPT/DTT)

   v. Radar/AIS/Beacon Licence etc. Below 806 MHz

   vi. Radar Above 806 MHz

   vii. Captive Trunking- Below 806 MHz

   viii. Captive Trunking- Above 806 MHz

   ix. HAM Module

   x. Satellite Licences- Braodcast Network, Telecom Network, Mobile Satellite Service (MSS), TV Channel endorsement/de-endorsement

   xi. Microwave Links [Microwave Access(MWA) and Microwave Backbone (MWB)] for Access Service providers

xii. Links for Internet Service Providers (ISP)[FDD&TDD]

xiii. DPL & NDPL

B. In addition to the above, online licensing facility for the following modules issued by Regional Licensing Offices (RLO) has also been launched on the Saral Sanchar portal.

i. AMSL

ii. MMSL-Ships,

iii. MMSL- Fishing Trawlers/Boats

iv. USR Licences

C. The following modules are presently under testing and will be launched shortly:

i. Experimental

ii. Demonstration

iii. Technology Trial

iv. Manufacturing &Testing

v. RTR

vi. GMDSS

Saral Sanchar Phase –II is also underway and will encompass User Management, Process Flow management, Escalation Matrix, Auto alerts to applicants, integration with BharatKosh etc to make the entire licence processing seamless and end-to-end paperless.

Under the Indian Telegraphy Act, 1885, the WPC Wing's Satellite section grants licenses to Government, Private Undertaking, Individual, Organisations etc for operation of dedicated Radio Communication Stations.

Frequency assignments for satellite based communication network including V-SAT, NLD, ILD, Inmarsat, IFMC, Teleports, DTH, DSNG, HITS etc have been issued to various service providers/ users/departments. Various permissions have also been issued to several broadcasters for operation of TV Channel up linking. Frequency assignments for Inflight and Maritime Connectivity (IFMC) have also been issued to IFMC service providers. Applications for all the type of satellite based License are being received online through Saral Sanchar Portal w.e.f 01.08.2020.

Actual Information for the period 01/04/2020 to 31/12/2020

1.	New Wireless License Scheduled issued	6580
2.	No. of Licenses Scheduled renewed	101
3.	No. of New frequencies assigned	06

Anticipated Information for the period from 01/01/2021 to 31/03/2021

1. New Wireless License Scheduled issued 2000
2. No. of Licenses Scheduled renewed 25
3. No. of New frequencies assigned 04

Frequency assignment for Terrestrial Services (<806 MHz)

S. No	Months Period From April'20 to March'21	Total AIP Issued	Total O/L Issued	Total Renewal Issued	Total no of new Freq Assigned	Total no of Licence schedule Issued	Total no of Licence schedule renewed
1	April'20	1	9	13	8	86	331
2	May'20	32	19	80	43	429	1853
3	June'20	63	23	294	89	365	6720
4	July'20	48	53	330	76	3982	11283
5	August'20	48	53	330	76	3982	11283
6	September'20	17	6	345	28	92	8306
7	October'20	72	52	378	76	102	8201
8	November'20	12	30	158	16	105	3717
9	December'20	8	23	408	14	76	8842
10	January'21	41	31	253	57	1292	6854
11	Febuary'21	41	31	253	57	1292	6854
12	March'21	41	31	253	57	1292	6854
	TOTAL	**424**	**361**	**3095**	**597**	**13095**	**81098**

No of Inter department Meetings 9

No of Radio Frequency assignments for VVIP visits 6

Achievements

1. Frequency assignments were issued to Airport Authority of India for NDB, ILS , Glidepath etc to facilitate communication and navigation for civil aviation.

2. Frequency assignment for Indian Railways for communication operations to Dedicated Freight Corridor has been given with End of Train Telemetry (EOTT) operation. This will help in timely alert in case of derailment of coaches.

3. Indian railways have also been assigned frequency spots for Distributed Power Wireless Control System (DPWCS)Capable of simultaneously operating multiple trains equipped with the DPWCS in a radius of 3 Kms. efficiently and without loss/interference in communication. Application and release of train brakes with feedback to the lead loco. Possible to isolate the defective loco. Train parting –Traction zero/Application of brake.

4. Various frequency assignments were also issued to Railways for security, Driver Guard

Communication, Shunting and yard communication, Rakshak System etc

Frequency assignment for first seaplane services in India inaugurated by Hon'ble Prime Minister of India on 31.10.2020 between the Statue of Unity, Kevadia, Narmada district and Sabarmati Riverfront in Ahmedabad in the State of Gujarat.

5. Various frequency assignments were issued to Fire Services, Forest, prisons, tiger reseve etc for thesafety, security and other essential services.

6. Forest Department uses frequency assignment as Radio Collar for monitoring movement of Tigers and counting them.

4.1.1 Auction of Spectrum for IMT services:

a. In order to make more spectrum available to telecom access services, Government sought the recommendations of the Telecom Regulatory Authority of India (TRAI) for auction of spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3400 MHz, 3400-3600 MHz bands. In the forthcoming auction, new bands: 3300-3400 MHz and 3400-3600 MHz, will facilitate IMT Services (including 5G technology). The recommendations from TRAI were received on 01.08.2018.

b. Recommendations of TRAI were examined and a back reference to TRAI was also sent by the Department. TRAI has provided its response to the back reference of DoT on 08.07.2019. TRAI recommendations and TRAI response on DoT's back-reference were considered by the DCC in its meeting held on 20.12.2019 and 11.05.2020. Based on the decisions of the DCC, issues on auction of spectrum in 700, 800, 900, 1800, 2100, 2300 & 2500 MHz bands were placed before the Union Cabinet for decision. Based on the Cabinet decision action to auction spectrum is taken by DoT. A total of 2251.25 MHz spectrum worth ₹3.92 lakh crore (at reserve price) is being offered for auction.

4.1.2 Liberalisation and Harmonisation of Spectrum:

a. In 2100 MHz band, harmonisation of spectrum held by M/s Vodafone Idea in Punjab and Haryana LSAs and by M/s Bharti Airtel in J&K LSA was carried out.

b. In 1800 MHz band, harmonisation of spectrum held by M/s Vodafone Idea in AP LSA was carried out consequent to the liberalisation of the same spectrum.

c. Case for liberalization of 6.2 + 6.2 MHz spectrum held by M/s Bharti Airtel Ltd. in 1800 MHz band in J&K LSA is currently under process.

4.1.3 TRAI recommendations on PMRTS

- Earlier, radio frequency assignments for PMRTS networks were made on administrative basis as per the frequency bands available in the National Frequency Allocation Plan (NFAP) to the licensees having valid PMRTS license agreement. As part of developing a holistic policy of spectrum allocation, a reference was sent to TRAI seeking its recommendations on method of allocation of spectrum for PMRTS. TRAI provided its recommendations on 20.07.2018 after

detailed consultation with various stakeholders.

TRAI recommendations are under examination in the department.

- Meanwhile, DCC in its meeting held on 24.07.2019 considered "Policy for Normative and Transparent Assignment/Authorisation of Spectrum". Based on the observations of the DCC, legal opinion in the matter was sought from Ld. AG. On 23.07.2020, Ld. AG provided his opinion. Based on the advice of Ld. AG, prayer before Hon'ble Supreme Court in the disposed 2G Case (supra) to clarify the 2G judgement so as to permit administrative allocation of spectrum for certain categories/usages (which includes PMRTS) wherein public interest requires allotment of spectrum and the concept of competitive bidding would not arise, is under examination in the DoT.
- After finalization of the "Policy for Normative and Transparent Assignment/Authorisation of Spectrum", decision on TRAI recommendations dated 20.07.2018 on "Method of allocation of spectrum for Public Mobile Radio Trunking Service (PMRTS) including auction will be further processed for a decision.

4.1.4 Renewal of PMRTS licenses:

Total 28 WOLs of the PMRTS operators have been renewed since April-2020.

4.1.5 SACFA Sitting Clearance:

Migration of the SACFA clearance system to the SARAL Sanchar portal: The SACFA module in the ASMS system was migrated to the SARAL Sanchar portal of DoT and the method of application and issue of licenses has been made completely digital.

- The SACFA sitting clearances issued and applications processed during the period 01.01.2020 to 31.12.2020 in both the ASMS and SARAL Sanchar system is as tabulated below:

Sl. No	Month & Year	SACFA applications processed & Acceptance No Issued.	SACFA Sitting Clearances Issued
1.	January 2020	37390	27344
2.	February 2020	15208	11387
3.	March 2020	12571	9580
4	April 2020	19231	32912
5.	May 2020	59397	42819
6.	June 2020	28463	32804
7	July 2020	24866	21226
8.	August 2020	22981	14272
9.	September 2020	23587	22010
10.	October 2020	27775	14407
11.	November 2020	33274	14321
12.	December 2020	46800	23326
	TOTAL	**351543**	**266408**

Anticipated achievement during the year 2021 (i.e from 01.01.2021 to 31.03.2021) is given below.

(i) Anticipated SACFA applications to be processed during the period
01.01.2021 to 31.03.2021 = 81,000

(ii) Anticipated SACFA clearances to be issued during the period
01.01.2021 to 31.03.2021 = 42,000

Frequency assignment for Terrestrial Services (>806 MHz)

Sl. No.	Item	Achievements		
		Actual		Anticipated
		2019-2020	01/04/2020 to 31/12/2020	01/01/2021 to 31/03/2021
1	New Radio Frequencies Agreed to various users	400	308	120
2	Inter Deptt. Meeting	20	2	6
3	Import Licenses	-	-	
4	No. of Wireless station license Schedule issued	192	269	75
5	No. of Wireless station license Schedule renewed	2414	4328	1000
6	Radio frequency assignment for VVIP visits	167	13	3

4.1.6 Participation of Indian delegation in ITU-R, Asia- Pacific Telecommunity meeting/seminars and other important international events.

Participation of Indian delegations in important international events

As a result of ongoing Covid 19 pandemic, all ITU and APT meetings and events have been held virtually since March 2020, including Radio Regulations Board (RRB), Radiocommunication Advisory Group (RAG), ITU-R study groups and relevant working parties, APT meetings w.r.t. radiocommunication viz. 26th APT Wireless Group and 1st APT Preparatory Group for WRC-23.

S. No.	Major milestones of International meetings w.r.t. Radiocommunication during 2020-21	Number
1	DoT delegations deputed for Radiocommunication and Spectrum related E- meetings	24
2	DoT delegates deputed	114
3	Non-DoT delegates included in DoT delegation	94
4	Preparatory Meetings held	06
5	Contribution documents submitted to ITU and APT meetings	04

Brief details of DoT participation in International meetings w.r.t radiocommunications during 1-4-2020 to 31-12-2020 are given below:

Meeting	*Brief about Meeting*	*Indian Participation*
1. Radio Communication Advisory Group (RAG) *22-25 May 2020*	*RAG reviews priorities, programmes, operations, financial matters and strategies related to Radiocommunication Assemblies, study groups and the preparation of radiocommunication conferences and RAG provides advice on these matters to the Director of the Radiocommunication Bureau.*	*Indian Delegation remotely participated in Radiocommunication Advisory Group (RAG) e-meeting during 22-25 May 2020 to review the priorities and strategies adopted in the Sector; provide guidance for the work of the Study Groups, recommend measures to foster cooperation and coordination with other organizations and with the other ITU Sectors.*
2. Working Party-4A *28-29 May 2020 and* *28 Oct' 2020 to 05 Nov'2020*	*Working Party 4A (WP 4A) - Efficient orbit/spectrum utilization for the fixed-satellite service (FSS) and broadcasting-satellite service (BSS)* *The major study areas of Working Party 4A are orbit/spectrum efficiency, interference and coordination and related aspects for FSS and BSS. Its work has significant relevance to the preparatory work for World Radiocommunication Conferences.*	*Indian delegation remotely participated in Working Party-4A e-meeting during 28-29 May 2020 and 28 Oct-05 Nov 2020.*
3. Working Party 4B *26-30 Oct' 2020*	*Working Party 4B (WP 4B) - Systems, air interfaces, performance and availability objectives for the fixed-satellite service (FSS), broadcasting- satellite service (BSS) and mobile-satellite service (MSS), including IP-based applications and satellite news gathering (SNG)* *Working Party 4B carries out studies on performance, availability, air interfaces and earth-station equipment of satellite systems in the FSS, BSS and MSS.*	*Indian delegation remotely participated in Working Party-4B e-meeting during 26-30 October 2020.*
4. Working Party 4C *28-29 May 2020 and* *21-27 October 2020*	*Working Party 4C – Efficient orbit/ spectrum utilization for the mobile-satellite service (MSS) and the radiodetermination-satellite service (RDSS)**	*Indian delegation remotely participated in Working Party-4C e-meeting during 28-29 May 2020 and WP -4C during 21-27 October 2020.*

		Indian delegation is actively taking up matter related to Indian Mobile Satellite Service in 2.6 GHz band *Two Contributions have also been submitted by Indian Administration during 21-27 October 2020.*
5. Working Party 5D *23 June -09 July 2020 and 05-16 Oct' 2020*	*WP 5D is responsible for the overall radio system aspects of the terrestrial component of International Mobile Telecommunications (IMT) systems, comprising the current IMT-2000, IMT-Advanced and IMT-2020 (5G).*	*The Indian delegation remotely participated in the Working Party-5D e- meeting during 23 June - 09 July 2020 and 04-16 October 2020, on issues related to the terrestrial component of IMT, including technical, operational and spectrum-related issues to meet the objectives of future IMT systems.* *Two Contributions have also been submitted by Indian Administration during 05-16 October 2020*
6. Working Party 5A *20-30 July 2020*	*Working Party 5A (WP 5A) - Land mobile service excluding IMT; amateur and amateur-satellite service*	*The Indian delegation remotely participated in the Working Party-5A e-meeting during 20-30 July 2020.*
7. Working Party 5B *20-30 July 2020*	*Working Party 5B (WP 5B) - Maritime mobile service including the Global Maritime Distress and Safety System (GMDSS); the aeronautical mobile service and the radiodetermination service* *WP 5B is responsible for studies related to the maritime mobile service, including the Global Maritime Distress and Safety System (GMDSS), the aeronautical mobile service and the radiodetermination service, including both radiolocation and radionavigation services.*	*The Indian delegation remotely participated in the Working Party-5B e-meeting during 20-30 July 2020.*
8. Working Party 5C *20-29 July 2020*	*Working Party 5C (WP 5C) - Fixed wireless systems; HF systems in the fixed and land mobile services*	*The Indian delegation remotely participated in the Working Party-5C e-meeting during 20-29 July 2020.*

	WP 5C is responsible for studies related to fixed wireless systems and HF systems in the fixed and land mobile services. It studies performance and availability objectives, interference criteria, RF channel/block arrangements, system characteristics and sharing feasibility.	
9. Study Group 5 *31 July 2020*	*ITU-R Study Group 5 (SG5) -Terrestrial Services: Systems and networks for fixed, mobile, radiodetermination, amateur and amateur-satellite services.*	*The Indian delegation remotely participated in the Study Group 5 e-meeting during 31 July 2020.*
10. AWG-26 *14-18 September 2020*	*The APT Wireless Group (AWG) is covering various aspects of emerging wireless systems including IMT/IMT-Advanced to meet the upcoming digital convergence era in the Asia-Pacific region. It is assisting the process of providing cost effective radiocommunications solutions and facilitating the transfer of technology.*	*Indian delegation remotely participated in 26th AWG e-meeting during 14-18 September 2020 on spectrum arrangement and harmonization, spectrum monitoring, spectrum sharing studies, future development of IMT, fixed wireless systems; software defined radios, intelligent transport system, wireless power transmission, modern satellite systems, aeronautical and maritime, PPDR and railway radio communication.* *One Contribution has also been submitted by Indian Administration during 14-18 September 2020*
11. APG 23-1 *24-25 September 2020*	*The APT Conference Preparatory Group for World Radio Communication Conference (APG) has the objective of harmonizing views and developing common proposals from the Asia-Pacific region for the World Radio Conference (WRC). APG meetings are important for Indian's interest as these meeting harmonize views and developing common proposals for Asia- Pacific region. India, being a major stakeholder, always has deep interest in shaping of common proposals in agenda items for WRC.*	*Indian delegation remotely participated in APG 23-1 e-meeting during 24-25 September 2020 to elect the Chairman and Vice-Chairmen of the preparatory group, Form the structure of the preparatory group, nominate other Office Bearers of the preparatory group based on the structure and develop a tentative work plan for the preparation of RA-23 and WRC-23.*

		One Contribution has also been submitted by Indian Administration during 24-25 September 2020.
12. Working Party 7A *14-18 September 2020*	*Working Party 7A (WP 7A) - Time signals and frequency standard emissions* *WP 7A covers standard frequency and time signal services, both terrestrial and satellite. Its scope includes the dissemination, reception and exchange of standard frequency and time signals and coordination of these services, including the application of satellite techniques on a worldwide basis.*	*The Indian delegation remotely participated in the WP 7A e-meeting during 14-18 September 2020*
13. Working Party 7B *21-25 September 2020*	*Working Party 7B (WP 7B) – Space radiocommunications application* *WP 7B is responsible for the transmission and reception of telecommand, tracking and telemetry data for space operation, space research, Earth exploration-satellite, and meteorological satellite services.*	*The Indian delegation remotely participated in the WP 7B e-meeting during 21-25 September 2020*
14. Working Party 7C *28 Sept -02 Oct'2020*	*ITU-R Working Party 7C – Remote sensing systems WP 7C covers remote sensing applications in the Earth exploration-satellite service (EESS), both active and passive, systems of the MetAids service, as well as ground based passive sensors, space weather sensors and space research sensors, including planetary sensors.*	*The Indian delegation remotely participated in the WP 7C e-meeting during 28 September – 02 October 2020 .*
15. Working Party 7D *14-18 September 2020*	*Working Party 7D (WP 7D) - Radio astronomy* *WP 7D covers the radio astronomy service. Its scope includes radio astronomy and radar astronomy sensors, both Earth-based and space-based, including space very long baseline interferometry (VLBI).*	*The Indian delegation remotely participated in the WP 7D e-meeting during 14-18 September 2020.*

16. ITU satellite Webinar *16-09-2020 and 07 October 2020*	*Radiocommunication Bureau is organizing a series of ITU Satellite Webinars that will be held online. The webinars will count with the presence of well-known experts from the satellite industry and space stakeholders that will present and discuss the following key topics:* *(i) Interference to Satellite Systems: panicking or protecting?* *(ii) Non-Geostationary Satellite Systems: entering into the era of actual service delivery*	*The Indian delegation remotely participated in Series of ITU Satellite Webinars e-meeting during 16th September 2020 and 07th October 2020 to stay up to date with the current technical and regulatory situation, evolution and trends in the satellite communications fields.*
17. Working Party 6A *06-14 October 2020*	*Working Party 6A (WP 6A) – Terrestrial broadband delivery WP 6A covers the actrivities in the area of terrestrial system characterstics, channel coding/decoding, modulation/demodulation, frequency planning and sharing for sound, video, multimedia and interactivity, characteristics of transmitting and receiving antennas and evaluation methods of service areas, transmitter and receiver reference performance requirements, requirements for source coding for terrestrial emission and requirements for metadata in terrestrial broadcasting.*	*The Indian delegation remotely participated in the WP 6A e-meeting during 06-14 October 2020.*
18. Study Group 6 *6-14 October 2020*	*Broadcasting Service* *Radiocommunication broadcasting, including vision, sound, multimedia and data services principally intended for delivery to the general public.*	*The Indian delegation remotely participated in the Study Group 6 e-meeting during 06-14 October 2020.*
19. TG 6/1 *19-23 October 2020*	*Task Group 6/1 (TG 6/1) - WRC-23 agenda item 1.5* *Task Group 6/1 is responsible for the development of draft CPM text under WRC-23 Agenda item 1.5.* *WRC-23 agenda item 1.15,*	*The Indian delegation remotely participated in the Task Group (TG 6/1) e-meeting during 19-23 October 2020.*

	"to review the spectrum use and spectrum needs of existing services in the frequency band 470-960 MHz in Region 1 and consider possible regulatory actions in the frequency band 470-694 MHz in Region 1 on the basis of the review in accordance with Resolution 235 (WRC-15)".	
20. RRS 20 *19-30 October 2020*	*International Telecommunication Union (ITU), Regional Radiocommunication Seminar 2020 for Asia and the Pacific (RRS-20-Asia&Pacific).* *RRS-20-Asia&Pacific will be held online from 19 to 30 October 2020*	*The Indian delegation remotely participated in RRS-20 (Asia Pacific) seminar during 19-30 October 2020 to train the officers on spectrum management and hands on training on software for filing of Terrestrial and satellite frequency assignments.*
21. Study Group 4 *06 Nov 2020*	*Satellite Services* *Systems and networks for the fixed-satellite service, mobile-satellite service, broadcasting-satellite service and radiodetermination-satellite service.*	*The Indian delegation remotely participated in the Study Group 4 e-meetings during 06 Nov 2020.*
22. ITU Council *VCC-2* *16-20 Nov 2020*	*Indian Administration is a member of ITU Council. The Council functions between Plenipotentiary Conferences and takes up the matter for ITU General Secretariat and its three Sectors including Radiocommunication Sector.* *The virtual consultation were of strict consultative nature and didn't take any decisions. It only draw proposed conclusions pending formal decisions at the subsequent physical Council session in 2021.*	*The Indian delegation remotely participated in the ITU Council VCC-2 e-meeting during 16-20 Nov 2020.*
23. Working Party 1A *24 Nov -02 December 2020*	*Working Party 1A (WP 1A) - Spectrum engineering techniques* *Working Party 1A is responsible for Spectrum engineering techniques, including unwanted emissions, frequency tolerance, technical aspects of sharing, spectrum engineering, computer programs, technical definitions, Earth-station coordination areas and technical spectrum efficiency.*	*The Indian delegation remotely participated in the WP 1A e- meeting during 24 Nov -02 December 2020.*

24. Working Party 1B *24 Nov -02 December 2020*	*Working Party 1B (WP 1B) - Spectrum management methodologies and economic strategies* *Working Party 1B is responsible for Spectrum management fundamentals, including economic strategies, spectrum management methodology, national spectrum management organization, national and international regulatory framework, alternative approaches, flexible allocations and long-term strategies for planning.*	*The Indian delegation remotely participated in the WP 1B e- meeting during 24 Nov -02 December 2020.*
25. Working Party 1C *24 Nov -02 December 2020*	*Working Party 1C (WP 1C) - Spectrum monitoring* *Working Party 1C is responsible for Spectrum monitoring, including the development of techniques for observing the use of the spectrum, measurements techniques, inspection of radio stations, identification of emissions and location of interference sources.*	*The Indian delegation remotely participated in the WP 1C e- meeting during 24 Nov -02 December 2020.*
26. Study Group 1 *03 December 2020*	*Spectrum Management* *Spectrum management principles and techniques, general principles of sharing, spectrum monitoring, long-term strategies for spectrum utilization, economic approaches to national spectrum management, automated techniques and assistance to developing countries in cooperation with the Telecommunication Development Sector.*	*The Indian delegation remotely participated in the Study Group 1 e- meeting during 03 December 2020.*
27. World Radiocommunication Seminars (WRS-20) *30 Nov -11 December 2020*	*The ITU organizes World Radiocommunication Seminars (WRS) on a biennial basis, in complement to the cycle of Regional Radiocommunication Seminars (RRS). WRS deal with the use of the radio-frequency spectrum and the satellite orbits, and, in particular, with the application of the provisions of the ITU Radio Regulations.*	*The Indian delegation remotely participated in WRS-20 seminar during 30 Nov – 11 December 2020 to train the officers on spectrum management and hands on training on software for filing of Terrestrial and satellite frequency assignments.*

	WRS-20 sessions was organized in two parts as described below. *1. WRS-20 PLENARY SESSIONS* *2. WRS-20 WORKSHOPS*	

4.1.7 Special Radiotelephony Restricted (RTR) examination: WPC has been granting Radiotelephony license to the Aircraft Pilots for operating radiotelephony apparatus equipped in it. On request of Indian Air Force (IAF) who has been inducting Boeing 777-300ER aircrafts for VVIP travel, a special RTR exam has been conducted for their pilots who will be flying Boeing 777-300ER aircrafts.

4.1.8 Initiatives during COVID-19 pandemic:

a) Assignment of Special Call Sign: An amateur radio operator (HAM) uses radio frequency spectrum worldwide for the purpose of non-commercial exchange of messages, wireless experimentation, self-training, private recreation, radio sport and contesting. They also play a vital role during disasters and national emergencies such as COVID-19, earthquakes, tsunamis, cyclones etc. by providing voluntary emergency communications in the affected areas. During the COVID-19 pandemic and natural disasters like Amphan Cyclone, Special Call Signs have been assigned to HAMs for providing secondary communication support to the public and local administration.

b) Extension to validity of Certificate of Proficiency (CoP): For onboarding an aircraft or ship, one should be possessing RTR or GMDSS-GOC license. Due to national lockdown, licensees were unable to renew their licenses. Therefore, it has been decided to grant an extension to validity of CoP licenses (GMDSS-GOC and RTR licenses) for facilitating the continuity of their services.

4.1.9 Achievements:

	Achievement (April 2020 to December 2020)	Anticipated achievement (January 2021 to March 2021)
1. Certificate of Proficiency Examination licenses		
No. of new CoP license issued.	128	43
No. of CoP license renewed.	1704	568
2. Radio Amateur Cell		
No. of new Amateur license issued.	442	147
No. of Amateur license renewed.	72	24
Change of location of station	25	8
Special Call Sign issued	69	23

4.2 WIRELESS MONITORING ORGANISATION (WMO)

4.2.1 Radio Monitoring — a regulatory and treaty requirement.

Radio monitoring service, a regulatory and treaty requirement, is carried out by the Wireless Monitoring Organisation of the Wireless Planning & Co-ordination Wing (WPC Wing). It is essentially technical in nature and its broad objectives are derived from the international treaty document — *Radio Regulations* of the *International Telecommunication Union*.

Major functions of Wireless Monitoring Organisation (WMO)

(i) Resolution of the harmful interference;

(ii) Monitoring for identification of frequency sub-bands for introduction of new services and/or for additional allocation to existing services;

(iii) Monitoring for spectrum recovery — unused/ under-used frequency authorizations;

(iv) Monitoring for ensuring adherence to licensing conditions;

(v) Monitoring / measurements for sharing studies;

(vi) Assistance to domestic wireless users;

(vii) Assistance to foreign administrations;

(viii) Participation in special monitoring campaigns of the International Telecommunication Union;

(ix) Measurements on radio emissions (intentional & non-intentional) for the possible introduction of new radio communication standards, and also for studying the EMC compatibility of the proposed new installations;

(x) Inspection of licensed installations; and

(xi) Monitoring of space emissions to protect authorized satellite transmissions.

4.2.2 Challenges before WMO

The increasing dependence of the society (the Government and the public alike) on the wireless communications demands WMO to ensure interference free radio communication environment. Therefore, WMO's primary focus, at present, is on public mobile radio communication services, public broadcasting services and safety-of-life services.

WMO is earnestly gearing up its resources— manpower and machine-power to ensure that these services continue to operate in interference-free environment. The primary reason for the interference protection to these services lies in their critical importance to the society as a whole. With respect to public mobile cellular service, WMO has following objectives:

To identify and eliminate the sources of interference occurring due to a multitude of reasons and to find unused spectrum for expansion of 2G, 3G & 4G services. In so far as public broadcasting is concerned,

its transmissions have been found to be affecting aeronautical mobile communications (civil aviation) and also infringing licensing parameters. To address the needs of such crucial services, WMO is in the process of procuring custom-designed radio monitoring products. Besides the service-aspect of radio monitoring, WMO has to ensure the quality of the spectrum.

4.2.3. Achievements:

Wireless Monitoring Organisation continues to provide interference-free wireless services in the increasingly crowded radio environment besides providing vital technical data for the introduction of new services such as 4G, 3G, BWA, LTE etc. to WPC Wing. Actual Achievements during 01/04/2020 to 31/12/2020 and anticipated achievements for 01/01/2021 to 31/03/2021 of Monitoring Activities, Satellite Monitoring Activities, Training & Development Activities & Administrative Activities are given below: -

4.2.3.1 Monitoring Activities:

- **WMO licenses (DPL and NDPL) launched for online application through Saral Sanchar portal of DoT:**

  Citizens can now apply for fresh/new Dealer possession licenses (DPL) and non-Dealer possession licenses (NDPL) by online filing of application on Saral Sanchar portal of DoT. This online facility is launched with effect from 11th May 2020. These licenses will be issued from 27 field units of WMO across the country through online Saral Sanchar Portal. These DPL/NDPL licenses are issued to legalize the possession of wireless telegraphy apparatus by public within the country as per the provisions of Indian Telegraphy Act 1885 and Indian Wireless Telegraphy Act 1933.

- **Enforcement initiative:**

  A mechanism for monitoring and inspection is being implemented for resolving interference complaints arising due to unauthorized BOOSTERS in the country. In this mechanism, WMO team takes action on the spot in presence of District Police authorities and complainant (licensed user) by detecting interfering source through monitoring, imparting awareness to public, serving notices and removal of boosters. This approach has proved to be game changer in dealing with booster related interference cases.

  Hundreds of unauthorized boosters were removed from people/ entities during these exercises and also notices were served on the spot to the users/owners of these boosters. Such exercises have been conducted by WMO Field units for various TSPs in different Telecom circles across India. TSP's have also acknowledged the improvement in their network quality after WMO's action.

  Besides taking strong action on the ground against unauthorized boosters creating interference to public telecom networks, WMO has directed its 27 field units across different States of India to ensure that dealer possession license holder of Wireless equipment should not engage in sale of unauthorized mobile signal boosters.

Further, WMO has also issued directions to monitor and detect the e-commerce websites displaying/selling unauthorized mobile signal boosters from their websites. This has been done to curb the influx of unauthorized mobile signal boosters across the country

- **Innovative approach for resolving interference arising due to Jammers**

  Apart from unauthorized use of mobile signal boosters, there is another issue relating to the use of Mobile Jammers. Telecom Service providers across the country are facing interference issues due to Jammers installed in Jail premises. Since, these Jail authorities are authorized to use Jammers so its removal is not possible. In order to resolve such interference issues, WMO has recently initiated joint monitoring and inspection exercises comprising;

  - Officers from WMO
  - Representatives of TSPs.
  - Technical representatives from company who has installed the Jammer
  - Jail authorities or as the case may be.

  The motive behind these joint exercises is to find an amicable solution acceptable to TSP as well as Jail authorities. Such an approach is showing good results in resolving tedious interference cases.

- **Measuring of cellular signal Spillage from neighboring countries**

  Besides fulfilling the commercial needs of spectrum monitoring for public based telecom services, WMO also caters the requirements pertaining to monitoring of spillage of signals from other neighboring countries within the Indian Territory. Such spillage of signals, not only cause interference to existing public telecom services in border areas but also raises security related issues for the country.

  From time to time, WMO provides inputs to the Ministry by conducting spectrum monitoring assignments along the border areas in coordination with security agencies.

- **Spectrum monitoring to ascertain the actual utilization of cellular spectrum by TSPs**

  WMO is also engaged in monitoring of cellular spectrum allocated to TSPs with a view to ascertain its actual utilization by TSPs in various telecom circles. WMO is conducting such monitoring exercises through its 27 field units across the country. Recently, WMO has submitted a consolidated report of cellular spectrum monitoring carried out through all its field units across the country. This monitoring was carried out in order to find out the utilization of RF spectrum allocated to TSP's and also identify the IMT operations against all the active frequencies in six bands viz. 800/900/1800/2100/2300 and 2500 MHz having 2G, 3G and 4G Technology

- **Spectrum Monitoring of PMRTS bands**

  Recently in August 2020, WMO has submitted a compiled monitoring report of PMRTS

spectrum bands carried out at 2116 numbers of locations through 09 field units of WMO. These monitoring assignments were carried to check the occupancy and spectrum utilization as per technical parameters authorized under their respective assignments/WOLs

- **High Priority Spectrum Monitoring Assignments**

  The quantitative analysis pertaining to spectrum monitoring carried out with in WMO with effect from 01.04.2020 to 31.12.2020 is tabulated given below:

S. No.	Particulars	Actual performance during the period from 01.04.2020 to 31.12.2020	Anticipated performance during the period from 01.01.2021 to 31.03.2021
1.	Monitoring assignment handled	6608	2000
2.	No. Wireless Transmission monitored	46563	15000
3.	Technical Assistance to users to maintain their operations within specified standards	632	150
4.	Infringements communicated to wireless users for remedial actions	1339	400
5.	Channel days utilized for Radio Monitoring.	81440	27000
6.	No. of Wireless Stations Inspected	5914	2000
7.	No. of Radio Noise Measurements	64563	21000
8.	No. of High priority / Standard interference complaints undertaken	485	150
9.	No. of assignment related to national security	17	10

4.2.3.2 Satellite Monitoring Activities:

Spectrum is a limited scarce resource and in order to ensure optimum utilization of spectrum each country undertakes regular monitoring exercises for spectrum. A satellite monitoring station can provide coverage of satellite emissions depending on the satellite footprint, thereby, covering at times the territory of several countries.

Satellite monitoring facility of WMO protects the India Satellite System from getting interfered from foreign satellites and detect the beacon signals for satellite identification and measurement of technical parameters on regular basis.

To ensure quality of services, satellite spectrum must be used by service providers as per terms and conditions approved by the Government. Regulatory measures must be enforced.

Upon the proliferation of private players in providing satellite-based services in broadcasting and telecommunication sectors such as DTH, Satellite TV broadcast, DSNG, VSAT etc from the year 2000 onwards, the Satellite Monitoring facility of WMO has taken up initiatives for enforcing the remedial/corrective action for Satellite Service Providers with regard to their adherence to the licensed technical parameters, infringement in satellite usages, unauthorized up-linking etc.

4.2.3.2.1 Satellite Monitoring Facility of WMO

a. WMO's International Satellite Monitoring Earth Station (ISMES), situated at Jalna, Maharashtra; monitors the satellite occupancy in Geostationary satellite orbit arc over India ranging from 20-degree East to 140-degree East in S-band, Lower C band, C Band, Extended C band and Ku Band. ISMES Jalna also has capability to analyse the signal in Real Time Mode which is useful in identifying the interfering signal. ISMES Jalna has been notified and published in List VIII (List of International Monitoring Stations) of International Telecommunication Union (ITU) Geneva.

b. WMO has also installed small satellite monitoring facility at WMS Trivandrum and IMS Delhi.

4.2.3.2.2 Satellite Monitoring Activities Undertaken: The following significant activities, among the others, were undertaken:

- **Detection of TV channels uplinked by Teleport Licensees:**

  International Satellite Monitoring Earth Station (ISMES), Jalna has carried out monitoring of Teleport Licensees. 29 numbers of TV of channels were found to be NOT endorsed in the respective licenses of Teleport licensees. Accordingly, 11 number of Infringement Notices (INF) to the respective Teleport licensees have been issued for violation of 27 unauthorised TV Channels during the period April-December, 2020.

- **Violation of authorised Technical parameters by Licensees of satellite-based services**: International Satellite Monitoring Earth Station (ISMES), Jalna has carried out monitoring of authorised technical parameters viz (i) type of Modulation; (ii) Forward Error Correction (FEC); and (iii) Carrier of the Licensees of satellite-based services. Total 8 number of violations to authorised technical parameters have been detected. Accordingly, 8 number of Infringement Notices (INF) to the respective Teleport licensees for violation of authorised technical parameters have been issued during the period April- September, 2020.

- **Special Satellite monitoring carried out i.r.o counter space jammers near Indian boarder oriented towards Indian Satellite:** WMO had also carried out monitoring of a number of GSAT Satellites among others viz. GSAT-Series Statellite, NSS-12, MEASAT-3 and MEASAT-3A.

  International Satellite Monitoring Earth Station (ISMES) Jalna has carried out the satellite monitoring of the C-band and Ku-band of theses satellites and provided the report along with the spectrum slote.

Annual Performance Output Statics Of Satellite Monitoring By WMO:

S. No.	Particulars	Achievements (Apr'20-Dec'20)	Anticipated (Jan'21-Mar'21)
(i)	No. of satellite Monitoring Assignment undertaken	460	170
(ii)	No. of satellite Monitoring assignment cleared	460	170
(iii)	No. of satellite monitored	109	35
(iv)	No. of satellite transponder/carrier monitored	667	235
(v)	No. of satellite carrier identified	1232	400
(vi)	No. of high priority satellite interference cases reported & resolve including satellite based public service operators	---	5
(vii)	No. of Channel hours utilized for satellite monitoring work	1328	300
(viii)	No. of satellite Inspection carried out related to satellite operations	---	05
(ix)	No. of Infringements issued	22	10

4.2.3.3 Training and Development Activities: -

Wireless Monitoring Training & Development Centre (WMTDC), New Delhi is nodal agency for conducting training courses for officers and staff of Indian Radio Regulatory Service. WMTDC is also implementing National Training Policy on Training to improve training both in qualitative and quantitative manner.

The detailed information pertaining to trainings conducted/ proposed in year 2020-21 is as follows:

S. No.	Name of Training Course	Duration & Month (tentatively)	No. of Trainees
1	Induction Training Program for IRRS Group A Officers Batch-2019	10 Weeks – 19.10. 2020 to 25.12.2020	7
2	Training on "Policy for Access Spectrum Assignments and Issues involved therein" (Total-2 Batches)	To be scheduled (1 week each)	45
3	Workshop on "WRC-19 outcomes and Indian contributions thereof with focus on vision to Agenda WRC-23" (Total-5 batches)	To be scheduled (1 week each)	95
4	Training for Fresh RTR (Aeronautical) Examiners (Total-5 batches)	To be scheduled (5 weeks each)	
5	Hands-on Global Marine Distress and Safety Systems (GMDSS) and Maritime Services for JTS/STS IRRS officers (Total 2 batches)	To be scheduled (1/2 weeks each)	
6	Workshop for JWO, JTS officers on "Amateur Radio- A 21st Century Hobby, Contemporary issues and role of WPC Wing/WMO" (Total-5 batches, 3 for JWO and 2 for JTS)	To be scheduled (2-3 days duration)	

S. No.	Name of Training Course	Duration & Month (tentatively)	No. of Trainees
7	Workshop for AO, JWO and JTS IRRS officers on "Public Financial Management System (PFMS)" (03 batches for AO, JWO and JTS each)	To be scheduled (3-4 days duration)	
8	Workshop for JWO, JTS and STS IRRS officers on "Government e-Marketplace (GeM) Procurement" (03 batches for JWO, JTS and STS each)	To be scheduled (3-4 days duration)	60
9	Training on "Right to information Act-2005" (for CPIO's of WMO)	To be scheduled (2-3 days duration)	40
10	Seminar on "Gender Sensitization and Women Empowerment" (for JWO, AO, TAO)	To be scheduled (2-3 days duration)	45
11	Workshop on "Noting and Drafting in Rajbhasha" (for 02 batches for JWO, 1 for AO & TAO)	To be scheduled (2-3 days duration)	45
12	Training on "Inspection of Licenses & Installations, Enforcement and Relevant Acts" (for JTS, STS)	To be scheduled (1 Week duration)	30
13	Training on "Spectrum Management Software and Database Management (ASMS, Saral Sanchar, MS Access program developed by RLO Mumbai etc.)"	To be scheduled (1 Week duration)	45
14	Seminar on "Radio Frequency Spectrum Economy and Market Valuations" (Market Transaction Multiples Valuation Models and Discounted Cash Flow (DCF) Analysis Models) (for JTS, STS, JAG level officers)	To be scheduled (1-2 days duration)	60
15	Training on "Spectrum Management for Satellite Communications" (Focus on management of radio spectrum related to satellite communications systems) (for JTS and STS officers)	To be scheduled (1 Week duration)	60
16	Training on "Wireless Communication Technologies" (for JTS, STS, JAG level officers)	To be scheduled (3 Week duration)	75
17	Training Course on "Satellite Communications and Radio Regulation Procedures for Asia Pacific Region" (for JTS, STS, JAG level officers)	To be scheduled (2 Week duration)	75
18	Workshop on "Spectrum Monitoring and Quality of Service" (for JTS and STS officers)	To be scheduled (2-3 days duration)	60
19	Training Course on "Wireless Mobile Broadband Internet, 5G and Future Services" ((for JTS, STS, JAG level officers) (Focus would be on 4G/4.5G access, LTE-Advanced and LTE-Advanced Pro, Evolved Packet System (EPS) architecture, WiFi traffic offload, 4G QoS, small cells approaches, and spectrum management etc.)	To be scheduled (3 Week duration)	75
20	Seminar on "Introduction to Optical Access Network and Fiber to the X (FTTX) Technologies for Spectrum Managers" (for JTS and STS officers)	To be scheduled (2-3 days duration)	60

S. No.	Name of Training Course	Duration & Month (tentatively)	No. of Trainees
21	Training on "Fundamentals on 5G technology and applications in practice" (for JTS and STS officers) (mobile networks evolution from 4.5 G to 5G, new technologies, features and architecture of the upcoming 5G systems like frequency bands, 5G NR, the new air interface NOMA, Cloud-RAN, Network Slicing, D2D communications, Small Cell Networks, New Radio (NR) specifications, radio access network planning and technology coexistence, technical, business and regulatory aspects of the 5G mobile networks)	To be scheduled (2-3 week duration)	60
22	Workshop on "Wireless Access Technologies to Internet Network" (for JTS, STS, JAG level officers)	To be scheduled (1 week duration)	75

4.3 TELECOMMUNICATION ENGINEERING CENTRE (TEC)

4.3.1 Activities:

Telecommunication Engineering Centre (TEC) is technical arm of DoT headed by 'Head of TEC', presently being Sr. DDG (TEC), to cover Transmission, Next General Network, Smart Network, Telecom Security, M2M/IoT, Green Passport and various other aspects of future technology networks with a view to formulate new specifications and update the existing ones in order to keep pace with the global technological developments.

TEC provides technical support to DoT and other government departments and formulates technical specifications in the form of Generic Requirements (GR), and Interface Requirements (IR), Technical requirements (TRs), Service requirements(SR), Standards, and Essential Requirements (ERs) for telecom equipment, network, systems and services to be deployed in Indian Telecom Network, in harmony with International Standards after wide stakeholder's consultations. During formulation of above mentioned documents, 'Test Schedule and Test Procedures' (TSTPs) are also prepared to carry out testing and certification of the equipment.

TEC also tests and certifies various telecom products for conformance to respective specifications, standards and their capability to interwork/interoperate in the existing network. Testing and certification activities are carried out region wise by TEC through its four regional centers established at Delhi, Kolkata, Mumbai and Bangalore as well as based on test result reports received from the TEC designated CABs (Conformity Assessment Bodies). As per various test schedules, TEC issues test certificates i.e. Interface Approval Certificate (IAC) against TEC IRs, Type Approval Certificate (TAC) against TEC GRs, Technology Approval Certificate to C-DOT against TEC GRs. Certificate of Approval (CoA) against Applicant's own specifications and Mandatory Conformance Certificate against Essential Requirements, under Mandatory Testing & Certification of Telecom Equipment (MTCTE) Scheme.

The Indian Telegraph (Amendment) Rules, 2017, provide that every telecom equipment must undergo

prior mandatory testing and certification. According to this amendment, any telegraph which is used or is capable of being used with any telegraph established, maintained or worked under the license granted by the Central Government in accordance with the provisions of section 4 of the Indian Telegraph Act, 1885; the testing is to be carried out by Indian Accredited Test Labs and based upon their test reports, certificate shall be issued by TEC. TEC is the nodal agency for Mandatory Testing & Certification of Telecom Equipment (MTCTE) against respective Essential Requirements.

In addition to the above, TEC is also handling following other major activities:

a) TEC prepares & releases, study papers/white papers on the standards, facilities and features of the telecom products and services to keep abreast with the latest technological developments.

b) NGN test Lab has been set up in TEC to keep pace with the advancement of technology and to carry out tests, and issue test reports, test certificates, etc., for the network components/ equipment in accordance with international standards.

c) TEC has IPv6 Ready Logo Test Lab for IPv6 testing and IPv6 readiness certification.

d) SAR Lab has been set up in TEC to carry out audit of the SAR (Specific Absorption Rate) values of the mobile equipment which is a measure of the amount of RF energy absorbed by humans while using a mobile phone. TEC is in the process of establishing new labs like Security Lab, Control lab, Access Lab, CPE&TL (Customer Premises Equipment &Terminals) Lab, Green Passport Lab etc.

e) TEC is designating agency for designation of domestic Conformance Assessment Bodies (CAB) and Certification Bodies (CB) for testing and certification against various GRs/IRs/SDs of TEC.

f) TEC is also responsible for recognition of foreign CABs for testing and certification of telecom equipment.

g) TEC provides technical support to DoT and other government organizations viz. TRAI, TDSAT, WPC, USOF, etc.

h) TEC participates in the meetings of standards development organizations, viz., ITU, ETSI, APT, WRC, etc.

i) TEC interacts with other international fora, viz., 3GPP, ETSI, IETF, One M2M, etc.

j) TEC proactively interacts with stakeholders and industry associations, viz., COAI, ISPAI, BIF, TEPC, VSAI, TEMA, CMAI, FICCI, CII, etc.

k) TEC is also engaged in validation and technology approval for C-DOT equipment in order to facilitate indigenous design and development of telecom technologies aimed specifically for local domestic manufacturers.

4.3.2 Achievements during financial year 2020-21:

➢ **Works carried out during 2020-21:**

- The Asia-Pacific Telecommunity (APT) is an intergovernmental organization that operates in conjunction with telecom service providers, manufacturers of communications equipment, and research and development organizations active in the field of communication, information and innovation technologies. The APT serves as the focal organization for Information and Communication Technologies (ICT) in the region and through its various programmes and activities, it significantly contributes to the development and growth in the ICT sector.

- TEC participated in the Asia-Pacific Telecommunity (APT) organized virtual meeting from 13 to 16 October 2020, which is the Virtual Interim Meeting of Working Groups of APT World Telecommunication Standardization Assembly (WTSA)-20 (APT WTSA20-WGS-IM-3). In the said virtual meeting, with active participation of Indian delegates, 5 (five) Preliminary APT Common Proposals (PACP) for modifications to the WTSA-16 Resolutions 50, 77, 84, 88 and 98 were finalized.

- The APT organized a virtual meeting of the 1st Meeting of the APT Conference Preparatory Group for the World Radio Conference (WRC)-23 (APG23-1) from 24 to 25 September 2020. In the said virtual meeting, with active participation of the delegates, the Chairman, two Vice-Chairmen and Chairmen of Working Groups were elected and work plan for further meetings has been developed/ finalized.

- Energy Consumption Ratings (ECR) for Telecom Products have been finalised and released, which will help in energy planning and reduction of carbon footprints by the telecom service providers.

- A familiarization training for TEC executives on the Next Generation Network (System Integration) Control Lab was organized on 3.09.2020 jointly by M/s Savitri Telecom services and M/s Spirent (OEM) to educate TEC officials for conducting acceptance testing.

- TEC successfully organized two webinars on **"Artificial Intelligence Technologies"** & **"IoT Security"** on 24th & 25th September 2020 respectively. The focus areas of webinar were- **"Artificial Intelligence Standardization"**, **"AI applications in Telecom"** and **"AI Research & Developments and IOT Security"** wherein eminent speakers from industry and government organizations shared their experiences and views on important developments in the field of AI. Almost 370 participants from different industry bodies, academia, manufacturers, government organizations, MNCs joined the webinar.

- M/s Electronic Regional Test Laboratory (East), Kolkata has been designated as Conformity Assessment Body (CAB) vide certificate dated 08.09.2020, thereby increasing the total no of CABs designated as 56.

- Report of working group-12 for NDCP-2018 on 'Framework for CDN, IDC and independent Interconnect Exchange in India' was approved and the various action points with concerned responsibility centers have been notified. The follow up activities will be

taken up accordingly.

- New Numbering Scheme has been devised by TEC for Conversion of existing TEC documents/specifications (GRs/IRs/SDs/TSTPs) into TEC Standards to maintain uniformity with the International pattern of Numbering the Standard documents.
- The TEC documents (GRs/IRs/SRs/SDs/TSTPs) which were earlier priced at Rs 800 per document have been made available for free download on TEC website www.tec.gov.in w.e.f. 16th September,2020 for various stakeholders. A link for free download has been provided and notice is uploaded on TEC website in this regard.
- Type Approval(TA) Certificate to M/s Himachal Futuristic Communications Ltd (HFCL), Solan, Himachal Pradesh has been approved by TEC for its WiFi Access Point(AP) product. The product was tested by RTEC and TA Certificate was issued on 16th September, 2020 by TEC, New Delhi
- TEC participated in the APT organized virtual meeting of the Correspondence Group for the Strategic Plan of the APT for 2021-2023 (CGSP-2) from 6 to 7 August 2020. In the meeting, draft of the Strategic Plan of the APT for 2021-2023 was developed/ finalized with active participation of the delegates.
- Meeting of Technical Advisory Group- Subcommittee was held in TEC on the subject of development of Single Window Portal for processing of Satellite applications.
- Development Coordination Committee (DCC) meeting of the Future Network division in TEC was held on 25.08.2020 to withdraw/ remove standards related to old and obsolete two wire equipment viz. coin collection box, PCO equipment and metering pulse generators etc and it was decided to prepare new standards related to new technology for pay phone services.

➢ **New Generic Requirements (GRs)/Interface Requirements (IRs)/Essential Requirements (ERs) have been issued during 2020-21:**

i. GR on Media Resource Function (MRF)

ii. GR on Standard on Ehternet Trraffic Analyser.

➢ **Generic Requirements (GRs)/Interface Requirements (IRs) have been revised during 2020-21:**

i. GR on Network Protocol Analyzer(NPA).

ii. GR on Micro duct for indoor & outdoor applications.

iii. GR on Standard on Stablized Light Source.

iv. IR for Point of Sales (PoS) Terminal with Wireless/Wire-line interfaces.

- **Generic Requirements (GRs)/Interface Requirements (IRs)/Essetial Requirments (ERs) have been ammended during 2020-21:**

  i. GR on Raw Material for manufacturing of Optical Fibre Cable.

  ii. GR on Riser Optical Fibre Cable (for indoor application).

  iii. GR on Armoured Optical Fibre Cable for UG Duct Application (Type-I & Type-II).

  iv. Trnsmission Terminal Equipment.

- **Study Papers/white papers/technical reports released during 2020-21:**

  i. High Capacity Optical Trnasport Network

  ii. Trustworthy Artificial Intellignece (AI)

- **Project Activity:**

  - **Phase – II of MTCE Portal:** Launch of Phase-II of Mandatory Testing MTCTE scheme covering three products: 1. Transmission Terminal Equipment (SDH and Multiplexing Equipment), 2. PON family of Broadband Equipment and 3. Feedback Device.

  - **Notice issue for:**

    - For making Certification for these products mandatory w.e.f. 01.02.2020.
    - Extension of acceptance of test results/test reports from lab accredited by ILAC signatories up to 30.09.2020, as a relaxation to MTCTE procedure.

  - **Activities related to National Working Groups corresponding to ITU-T :**

    - NWG-20 meeting held on 17th June 20 in TEC.
    - Inputs on India's Third Biennial Update Report to the UNFCC.
    - Remote participation in ITU-T SG-13/WP-3 meeting.
    - Remote participation in ITU-T SG-15 Meeting.
    - Artificial Intelligance Quotient (AI-Q) for indexing and rating AI algorithms" has been prepared and circulated for comments of NWG.

- **Workshops/Webinars :**

  - A webinar on "Telecom Equipment Ecosystem with Open RAN" was organized by MT Division, TEC on 20-10-2020. The session was for three and half hours and had expert speakers from from M/s Mavenir, USA, M/s Altiostar, M/s Reliance Jio and M/s Samsung who covered various aspects of Open RAN including its flexible and open architecture, benefits of its adoption including increased automation and optimization, security, emergence of new ecosystem around Open RAN allowing newer players into the mobile

network equipment vendor domain and deployment challenges. The advantages of Open RAN in terms of providing opportunity for local suppliers/start-ups to participate in building radio access networks by leveraging the software building capability in India was also discussed.

- A webinar was conducted on 27.10.2020 on the topic "Next Generation Transport Solution". The webinar witnessed wide participation from various units of DoT including TEC, NTIPRIT, LSAs as well as from Industry on Advance DWDM Solution for 100G and Beyond and 5 G and its impact on Optical Transport.

➢ **Testing & Certification by Telecom Engineering Centre (TEC) during 2020-21:**

Interface Approval	: 06
Type Approval	: 03
Revenue	: ₹ 6,37,300/-

4.4 UNIVERSAL SERVICE OBLIGATION FUND (USOF)

4.4.1 Organizational Structure and Functions and Objectives of USOF :

4.4.1.1 Organizational Structure

The Universal Service Obligation Fund, formed by an Amendment Act of Parliament, is headed by the Administrator USO Fund, appointed by the Central Government, for the administration of the Fund. It is an attached office of the Department of Telecommunications, Ministry of Communications.

4.4.1.2 Amendment to Telegraph Act for creation/ administration of USO Fund:

The Universal Service Support Policy for provision of telecom facilities in rural and remote areas of the country came into effect from 01.04.2002. The guidelines for universal service support policy were issued by DoT and were placed on the DoT website on 27th March 2002. Subsequently, the Indian Telegraph Act, 1885 was amended in December 2003 vide the Indian Telegraph (Amendment) Act, 2003 thereby creating Universal Service Obligation Fund (USOF). The USO Fund was established with the fundamental objective of providing access to 'Basic' telegraph services to people in the rural and remote areas at affordable and reasonable prices. Subsequently the Indian Telegraph (Amendment) Act 2006 was passed on 29.12.2006 to repeal the term "basic" wherein the scope of USO Fund was widened to provide access to telegraph services (including mobile services, broadband connectivity and creation of infrastructure like OFC) in rural and remote areas.

4.4.1.3 Rules for administration of USOF

The Rules for administration of the Fund known as Indian Telegraph (Amendment) Rules were initially notified on 26.03.2004. The Rules were subsequently amended as Indian Telegraph (Amendment) Rules 2006 in order to enable support for mobile services and broadband connectivity in rural and remote areas of the country and the same were published in gazette on 17.11.2006. Thereafter, the Rules have been amended from time to time.

4.4.1.4 Functions and Objectives

The USO Fund was established with the fundamental objective of providing access to 'basic' telecom services to people in the rural and remote areas at affordable and reasonable prices. Subsequently the scope was widened to provide subsidy support for enabling access to all types of telecom services, including mobile services, broadband connectivity and creation of infrastructure like OFC in rural and remote areas.

The implementation of the USO related activities is carried out by the "eligible operators", i.e. the entities having valid license or registration or authorization from Central Government/ Department of Telecommunication for providing telecom services or infrastructure or any other entities as specified by the Central Government from time to time.

4.4.2 Implementation status of the ongoing activities, being undertaken by the USO Fund, is as under:

4.4.2.1 BharatNet:

BharatNet, one of the biggest rural telecom projects of the world, is being implemented in a phased manner to provide connectivity at all Gram Panchayats (approx. 2, 50,000) with broadband in the country.

The Union Cabinet on 25.10.2011 approved the project for creation of National Optical Fibre Network (NOFN/now BharatNet) to provide Broadband connectivity for connecting Block Headquarters (BHQs) to Gram Panchayats (GPs) by using existing fibre of Central Public Sector Undertakings (CPSUs) – Bharat Sanchar Nigam Limited (BSNL), RailTel Corporation Limited (RailTel) and Power Grid Corporation of India Limited (PGCIL) and laying incremental fibre to bridge the connectivity gap up to the GPs. The incremental Optical Fibre Cable (OFC) so laid was to be owned by the Government and the ownership of the existing fibre was to be continued to be vested with the current owners. Bharat Broadband Network Limited (BBNL) was incorporated on February 25, 2012 as a Special Purpose Vehicle for the establishment, management and operations of NOFN.

The Phase-I has been completed in December 2017 with the implementation of over 1 lakh GPs, and the remaining Gram Panchayats are being connected under BharatNet Phase-II under various models of implementation, i.e. State-led Model, CPSU-led Model and Private Sector-led model.

As on 31.12.2020 under BharatNet project (Phase-I & II), by laying total 4.85 lakh km Optical Fibre Cable, a total of 1.63 lakh GPs have been connected by Optical Fibre Cable (OFC) and approximately 1.5 lakh GPs have been made Service Ready.

The Last Mile connectivity is being provided through Wi-Fi or any other suitable broadband technology, including FTTH to access broadband /internet services at Public places & Government Institutions such as school, hospital, post offices, Aanganwadi, customer service centres, police station, etc. As on 31st December, 2020, Wi-Fi hotspots have been installed at about 1,00,000 GPs and 5,00,000 FTTH connections have been provided. The combined data usage is to the tune of over 1400 TB/month.

The strategy for BharatNet implementation has been revised as per the recommendation of Niti Aayog and approval of DCC for Public -Private Partnership (PPP) model through Viability Gap Funding (VGF) for effective utilization of network and induction of private sector efficiency in its operation and maintenance. The mandate of BharatNet has also been changed to connect more than 6 lakh inhabited villages on fiber across the country expanding the scope from 2.5 lakh Gram Panchayats. The revised strategy of PPP model has been accordingly modified and necessary approval has been obtained from PPP Appraisal Committee of Department of Economic Affairs (DEA) on 12.01.2021 for covering upto 3.5 lakh villages through PPP model over 16 States. The Cabinet Note, as per revised strategy is under process for approval for connecting 6 lakh villages on fiber.

4.4.2.2 Comprehensive Telecom Development Plan (CTDP) for the North-Eastern Region:

On 10.09.2014, the Union Cabinet approved a proposal to implement Comprehensive Telecom Development Plan for the North-Eastern Region. The Project envisaged to provide 2G mobile coverage to 8621 identified uncovered villages, installation of 321 mobile tower sites along National Highways and strengthening of transmission network in the States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

A. Mobile Services in Uncovered villages in rest of NER and seamless coverage along National Highway:

Under this scheme, Mobile connectivity is being provided by setting up 2128 towers in the uncovered villages and along National Highways of Assam, Manipur, Mizoram, Nagaland, Tripura, Sikkim, and Arunachal Pradesh (National Highways only) of North-East region. The Agreement was signed on 08.12.2017 and more than 1,300 sites are already radiating.

B. Mobile Services in Uncovered villages of Meghalaya and seamless coverage along National Highway:

The project was approved by the Cabinet on 23.05.2018 and as per approval of Digital Communications Commission (DCC), the work has been awarded for 1,164 uncovered villages on 04.09.2020 for provisioning of 4G mobile services. Project will be completed in 18 months since the award of work.

C. Mobile Services in Uncovered Villages of Arunachal Pradesh and 2 Districts of Assam:

As per Cabinet approval on 09.12.2020, provision of 4G mobile services in 2374 uncovered villages in Arunachal Pradesh and two Districts of Assam (Karbi Anglong & Dima Hasao) at an estimated cost of ₹2028.80 crore will be carried out and RFP is being floated.

4.4.2.3 Implementation of Comprehensive Telecom Development Plan for Islands:

Telecom Commission in its meeting held on 07.11.2014 approved, in principle, an Integrated and Comprehensive Telecom Development Plan for Andaman & Nicobar Islands and Lakshadweep in accordance with TRAI recommendations dated 22.07.2014 for 'Improving Telecom Services in Andaman & Nicobar Islands and Lakshadweep'. The plan consists of the following schemes:

(A) Andaman & Nicobar Islands: -

(i) Submarine OFC Connectivity between Chennai and Andaman & Nicobar Islands:

Cabinet in its meeting held on 21.09.2016 approved the dedicated submarine OFC link from Chennai to Port Blair & 5 other Islands viz. Car Nicobar, Little Andaman, Havelock (Swaraj Dweep), Kamorta and Great Nicobar Island. Subsequently, submarine OFC connectivity of Rangat Island via Long Island from Havelock Island (Swaraj Dweep) was approved in addition to 6 Islands. 2313 km four pair Submarine Optical Fibre Cable has been laid, out of which one fibre pair has been shared with Ministry of Defence exclusively. Hon'ble Prime Minister inaugurated and dedicated to nation the Chennai -Andaman Nicobar Islands (CANI) Project on 10.08.2020 at a cost of ₹1,224 crore. All segments of CANI submarine cable project are commissioned with 200 Gbps Bandwidth available between Chennai to Port Blair and 100 Gbps bandwidth within Islands.

(ii) Satellite Bandwidth Augmentation for Andaman & Nicobar Islands:

Proposal for augmentation of satellite bandwidth from 2 Gbps to 4 Gbps in Andaman & Nicobar Islands by BSNL on nomination basis at an estimated cost of ₹36.23 crore was approved by DCC on 13.06.2019. By using VSAT terminals provided by ISRO, the satellite bandwidth in Andaman & Nicobar Islands was enhanced by 700 Mbps. Presently satellite bandwidth is 3.49 Gbps, which is likely to be augmented to 4 Gbps by March 2021.

(iii) Provision of 4G Mobile Coverage in Uncovered Villages and seamless 4G Mobile coverage of NH223 in Andaman & Nicobar Islands:

DCC in its meeting held on 20.12.2019 approved a proposal for setting up of 82 towers to provide mobile services on 4G Technology in identified 85 uncovered villages and 42 towers for providing 4G mobile services to bridge the gaps in mobile connectivity along NH-223. The RFP has been finalised and work is likely to be awarded in due course.

(B) Lakshadweep Islands: -

(i) Submarine OFC Connectivity between Kochi and Lakshadweep Islands:

Cabinet in its meeting held on 09.12.2020 approved a proposal for Provision of Submarine Optical Fibre Cable Connectivity between Kochi and Lakshadweep Islands (KLI Project) comprising of Kavarati and ten other Islands, namely, Kalpeni, Agatti, Amini, Androth, Minicoy, Bangaram, Bitra, Chetlat, Kiltan and Kadmat. The total estimated Route length is about 1,772 km and the total Financial Implication is about ₹1072 crore (excluding taxes). The project is targeted to be completed by May 2023.

(ii) Satellite Bandwidth Augmentation for Lakshadweep Islands:

Proposal for augmentation of satellite bandwidth from 318 Mbps to 1.71 Gbps in Lakshadweep Islands utilizing GSAT-11 & 19 capacities at an estimated cost of ₹25.75 crore was approved by DCC on 31.08.2018. By using VSAT terminals provided by ISRO, the satellite bandwidth in

Lakshadweep Islands was enhanced by 700 Mbps. Presently the satellite bandwidth is 1.15 Gbps and is likely to be augmented to 2 Gbps by March 2021.

4.4.2.4 Re-provisioning of Digital Satellite Phone Terminals (DSPTs) provided to MHA agencies (CAPFs), MoD agencies (Army, BRO) and other agencies using VSAT connectivity under BharatNet Project:

These DSPTs are provided in remote, rural, far-flung and difficult terrain where no coverage from any other operator is available. As a short term measure, INMARSAT terminals were provided to MHA agencies (CRPF, BSF, ITBP, & SSB) and MoD agencies (Indian Army & BRO) to meet their critical communication needs. DCC in its meeting held on 20.12.2019 approved the proposal for provisioning of Digital Satellite Phone Terminals (DSPT) to these agencies using VSAT connectivity under BharatNet Project. Out of total 1409 VSATs to be provided, 996 sites have been operationalized as on 11.01.2021.

4.4.2.5 Mobile Service in Uncovered Villages:

Government has prioritized to reach remote areas of the country such as North-Eastern States, Islands, Himalayan States, Western Border States and more importantly the Left Wing Extremism affected areas in the first phase.

4.4.2.5.1 354 Uncovered Villages Scheme: Tender for provision of mobile service in 354 uncovered villages of J&K, Ladakh, Himachal Pradesh, Uttar Pradesh, Bihar, Rajasthan, Gujarat, Uttarakhand, Border areas and other priority areas was awarded at a cost of ₹337 crores and is under implementation. The project is likely to be completed by December, 2021.

4.4.2.6 Scheme for Mobile Communication Services in Left Wing Extremism (LWE) Affected Areas: -

(i) LWE Phase-I:

(a) On 20.08.2014, the Cabinet approved the implementation of the project in LWE areas at a cost of ₹3567.58 crore to provide Mobile Services in 2199 locations in the 10 affected States of Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Maharashtra, Madhya Pradesh, Odisha, Telangana, Uttar Pradesh and West Bengal. The project has been completed.

(b) 4G Upgradation of existing LWE-I sites is under consideration for the sites which are not yet covered by 4G.

(ii) LWE Phase II:

The Cabinet approved on 23.05.2018 a proposal for Phase II of the project in LWE affected areas with a subsidy support of ₹7330 crores. The project has been subsequently approved for 2,542 towers to provide 4G mobile services and the RFP is under approval for floating at an estimated cost of ₹2,200 crore. Retendering is under process for 2542 number of tower sites. DCC approval for the same has been obtained on 01.12.2020.

4.4.2.7 Aspirational Districts Scheme

(a) A Scheme for **502 uncovered villages of Aspirational District over four States** (namely Uttar Pradesh, Bihar, Madhya Pradesh & Rajasthan) for provisioning of 4G based Mobile services has been finalized. Letter of Intent (LoI) and agreement is under process.

(b) A scheme for 7,287 uncovered villages is under Cabinet approval for provisioning of 4G based Mobile service in 44 Aspirational Districts of 5 States of Andhra Pradesh, Chhattisgarh, Jharkhand, Maharashtra and Odisha at an estimated cost of ₹6,466 crore.

4.4.3 Status of USO Fund:

Universal Access Levy (AL) amounting to ₹1,12, 029 crore has been collected and the total allotment amounting to ₹56,328.45 crore received through Parliamentary approvals has been utilized to fulfil the objective of USO Fund. The balance of UAL amount available as potential fund under USO, at the end of November 2020 is ₹ 55700.37 crore.

Details of subsidy disbursed under Universal Service Obligation Fund during the FY 2020-21 & current financial year:

	Amount proposed to be Disbursed during 2020-21	Amount Disbursed in 2020-21 (upto November 2020)
Amount Disbursed under USOF subsidy	8000 (BE) 7200 (RE)	4305

4.5 NATIONAL CENTRE FOR COMMUNICATION SECURITY (NCCS)

National Centre for Communication Security (NCCS) - a center under Department of Telecommunications is created, with headquarters at Bengaluru, for the purpose of establishing security testing and certification within the country. NCCS is headed by Sr. DDG level officer and the unit has become operational as independent unit with delegated financial powers and operational budget for the year 2020-21.

In order to make the network more secure and less vulnerable from internal and external threats, Government envisaged a pilot Telecommunication Testing and Security Certification (TTSC) project for testing and validating each network element before its integration with the network. The Security Assurance Standards Facility (SASF) of Department of Telecommunication at Bengaluru is an outcome of this pilot project and will be the national facility for coming up with the Security Assurance Requirements for Telecom equipment to be inducted into the Indian telecom networks.

SASF is established in 12000 sq. feet space at City Exchange building, Sampangi Rama Nagar, Bangalore at a cost of Rs. 42.06 crores. It is equipped with four test beds for conducting research and development of security standards and framing the security requirements for the communication equipment. A proposal for setting up a 5G security test bed at NCCS, Bengaluru is also under consideration.

4.5.1 Objective: The objective of NCCS is to establish and operationalize a framework of securitytesting

and certification framework within the country. The approved framework defined through COMSEC scheme along with Security Certification Process has been published on NCCS web portal. Presently, there are following three verticals under NCCS: -

(i) **Security Assurance Standards (SAS) division:** The division is assigned the task of developing security standards and requirements for ICT equipment. The division is responsible for developing test processes, test suites, security test standards, recommending test tools and notifying contemporary security features for various network elements of Telecom network. The SAS unit will prepare the security requirements/standards called Indian Telecom Security Assurance Requirement for network elements (or a class of network elements) and notify them. This unit has finalized ITSARS for IP Router, WIFI Modem, MME(4G), E-Node B(4G), P- Gate Way(4G), SIM/ USIM and Mobile Device after vendor consultation.

(ii) **Security Lab Recognition (SLR) division:** The division is responsible for creating framework for establishing telecom security test labs in India in private and public sector and recognizing the telecom security testing labs, Notifying Telecom Security test lab recognition mechanism, and Conducting infrastructure assessment for recognition of security test labs.

(iii) **Security Certification (SC) division:** The division is mandated to develop framework of issuing security certificate for the successfully tested products. The work will include evaluation of the test results from Security labs and recommending issuing of Security certification based on the testing performed by recognized labs. SC division shall also be responsible for over-all coordination amongst the three verticals and work of NCCS headquarters.

4.6 NETWORK OPERATIONS CONTROL CENTER (NOCC)

4.6.1 Regulation of space segment: NOCC has been performing regulatory function for usage of space segment by VSATs, NLD (National long distance services), ILD (International long distance services), Broadcasting, DTH (Direct-To-Home) and HITs (Headend in the Sky) services as per their allocation, presently on 27 Satellites Viz. GSAT-6, GSAT-8, GSAT-10, GSAT-12, GSAT-14, GSAT-15, GSAT-16, GSAT-17, GSAT-18, GSAT-30, Measat-3, 3B, SES-7, SES-8, SES-9, ST2, IS-17, IS-20, IS-39, IS-902, NSS-12, Asisasat-4, 5, 7, Chinasat-12, Thaicom-4 and PALAPA-D. NOCC, issued 65 uplink permissions and 58 frequency plan approvals to various applicant agencies during Jan-Dec 2020.

NOCC, during Jan-Dec 2020, monitored and controlled various transmission parameters of carrier uplink from 1565 Satellite Earth Stations/Teleports/DSNG & more than 2,85,000 VSATs. NOCC also resolved the RF interference namely RF interference due to cross polar carriers, FM (Frequency modulation) Radio pick up, unauthorized pickup, DSNGs operations, other satellites from INSAT and other satellite administrators etc. identifying source of the suspected RF interference.

NOCC carries out the mandatory performance verification testing of antennae of satellite earth stations and DSNG. During Jan-Dec 2020, NOCC carried out mandatory performance verification testing tests of 36 antennae of different type of satellite earth stations and DSNG before inducting them into network.

During Jan-Dec 2020, NOCC has issued 14 numbers of uplink permissions for live telecast of events of national and international importance and NOCC played important role in interference free telecast.

4.6.2 Financial Achievements: During FY 2020-21, NOCC has billed Rs. 54 crore for the services being rendered by NOCC to the various user agencies and for uplink permissions for live telecast of events of national and international importance.

4.7 DIRECTOR GENERAL TELECOM (DGT)

4.7.1 Director General Telecom is an Apex level officer and acting as head of the DoT field units in all the 22 Licensed Service Areas located across the country. Headquarter of Director General Telecom (DGT-HQ) is located in New Delhi. The Office of Director General Telecom is an attached office of Department of Telecommunications.

Government has evolved the Director General Telecom structure to ensure the presence of Telegraph Authority in the field at all the Licenced Service Areas (LSA) and Large Telecom Districts of the country and also in order to ensure that service providers adhere to the licence conditions in the field and also to take care of various telecom activities such as Monitoring of compliance to prescribed norms regarding acquisition of subscribers, Monitoring of compliance to Electro Magnetic Field (EMF) radiation norms, Monitoring of Telecom Network security issues, illegal/clandestine telecom operations, Public Grievances, USOF Projects, RoW issues, Rural connectivity etc.

To address these issues related to National Security, the Government created Vigilance & Telecom Monitoring cells (VTM) in Nov-2004 as representative of telegraph/licensor in the field. Initially four VTMs at Delhi, Mumbai, Hyderabad and Chennai were formed. During the year 2006, nine more VTM Cells were set up in the circles of Punjab, Rajasthan, Gujarat, Kerala, Karnataka, Maharashtra, Tamil Nadu, West Bengal and UP (East). Subsequently in Jan-2007, fifteen VTM Cells were added in Andhra Pradesh, Bihar, Madhya Pradesh, Haryana, UP (West), Andaman & Nicobar, Assam, Chhattisgarh, Jammu & Kashmir, Jharkhand, Himachal Pradesh, North East-I, North East-II, Odisha and Uttarakhand. Six more VTM Cells were added in March-2007 for Kolkata, Ahmedabad, Bengaluru, Pune, Jaipur and Lucknow, taking the total number of VTM Cells to 34.

Since formation of Vigilance & Telecom Monitoring (VTM) Cells in DoT, the role and functions of VTM Cells were increased manifold. With a view to reflect the entire gamut of functions assigned to the VTM Cells and to distinguish their role vis-a-vis staff-vigilance activities, the VTM Cells were renamed as Telecom Enforcement Resource and Monitoring (TERM) Cells with effect from 5th August 2008. On further enrichment of the roles and functions, these field units are renamed as LSA Units of DoT (regrouped into 22 LSAs from 34 VTM Cells) under Director General Telecom in Dec' 2016.

In Feb 2017, a unified structure of Field units including TERM, Security, PG and NT was created in each LSA and headed by a HAG+ / HAG level officer in all the 22 LSA Units spread all over the country. In the present set up of DG Telecom, there are five DDGs at Head Quarter assisting DG Telecom to monitor the functioning of 22 LSAs. In each LSA, there are five functional verticals namely Service Compliance, Technology, Security, Rural and Administration. At present, there are 37 field units in 22 LSAs.

4.7.2 In the year 2020-21 the vertical wise achievements and various functions carried out in the License Service Areas (LSAs) are as below:

4.7.2.1 Service Compliance Vertical:

- **Monitoring of compliance to prescribed norms regarding acquisition of subscribers:** As per licence terms & conditions, the Licensees are required to ensure adequate verification of each and every mobile customer before enrolling him as a subscriber. The DoT has issued instructions in this regard from time to time. The LSAs conduct the CAF audit on sample basis. A monthly sample of 0.1% of the subscriber base of each licensee is audited by the LSAs, whereas a quarterly sample of 0.2% of the subscriber base of each licensee is audited in J&K, Assam and North-east. It corresponds to audit of approx 12 lakh CAFs per month across the country. Apart from above, LSAs are also carrying out following activities:

  i. Analyses of subscriber databases submitted by TSPs.

  ii. Inspections of warehouses and Point of Sale (PoS) of the TSPs for having samples directly from the storage.

  iii. Investigation of complaint related to subscriber verification reported by various sources including Law Enforcement Agencies (LEAs).

  iv. Analysis and verification of bulk customer verification (10 or more than 10 connections to an entity/company/organization).

  v. Police verification of franchisee of TSPs in sensitive states (Assam, North East and J&K).

  Due to difficulties being faced by TSPs in wake of COVID-19, guidelines were issued to relax the requirement of physical presence of TSPs and CAF audit work to be completed by LSAs using digital means to the extent possible such as joint discussion with TSPs using Video Conferencing, acceptance of representations filed by TSPs using digital signature etc.

- **Checking of compliance to Electro Magnetic Field (EMF) radiation norms:** With the increasing concerns over harmful effects of Electromagnetic Radiation on human health, in the year 2010, LSAs were entrusted with the work of cross checking the compliance of EMF radiation norms as prescribed by DoT from time to time. LSAs verify the prescribed EMF self-certificates submitted by TSPs and also check the EMF radiation exposure levels of up to 10% of Base Transceiver Station (BTS) annually on random basis. In case of non-compliance of EMF radiation norms by TSPs, penalty on the concerned TSP(s) is levied by LSAs. LSAs have audited 24332 BTSs from 01.04.2020 till 31.10.2020 across all TSPs. Further, due to difficulties being faced by TSPs in wake of COVID-19, timelines for the submission of EMF self-certificate to LSA field units were relaxed.

- **Tarang Sanchar Portal** is a web portal to disseminate the information to the public regarding Electro Magnetic Fields (EMF) radiation and to allay the misconceptions and fear of health issues due to EMF emissions from mobile towers. It was inaugurated by Hon'ble Minister of State (Independent Charge), MoC on 2nd May 2017. It has the details of Telecom Towers and

BTSs spread across the country catering to various technologies (2G, 3G and 4G) of all Telecom Service Providers (TSPs) licensed by DoT. Through the portal, any person can request for EMF emission measurement at a location by paying a nominal fee of ₹4000/- online. During the period from 01.04.2020 till 30.09.2020, a total of 24 EMF Measurement requests have been received by LSAs through Tarang Sanchar Portal. The tests are conducted by the local field unit of DoT and the test report is provided to the requestor.

- **Service testing for checking Roll-out obligations**: As per the license agreement all the Access Service Licensees are required to roll-out their services within prescribed time periods and offer Districts/Blocks/Towns on sample basis for test of the quality/ coverage and other parameters by DoT which is termed as Service Testing. In the year 2007, LSAs were entrusted with the responsibility to carry out the Service Testing of the cases offered by TSPs and issue Service Test Result Certificates (STRCs). LSAs have carried out service testing to check Roll-out obligations of 42 towns for period from 01.04.2020 to 31.10.2020 across all TSPs.

4.7.2.2 Technology Vertical-

- **Work from Home relaxation to OSPs**: In April 2020 due to COVID-19 concerns, DoT has granted relaxation in the terms and conditions for OSPs to facilitate Work from Home upto 31.05.2020 which were further extended upto 31.12.2020. As on 30.09.2020, 1553 OSPs with 784379 extended agent positions are availing WFH facility. Later on, DoT has issued new guidelines for OSPs on 05.11.2020 which made it easier for companies for adopting 'Work from Home' and 'Work from Anywhere' policies.

- **Delegation of signing of ISP licence agreement**: In July 2020, DoT has delegated the signing of Unified Licence Agreement (UL) and Unified Licence (Virtual Network Operators) (UL VNO) of ISP Authorization of Category "A", "B" and "C" at field offices of DoT i.e. at Licensed Service Area (LSA) office of respective Telecom Service Area.

- **Inspections of TSPs/ Subscribers**: LSAs are carrying out inspections of UASL/CMTS/Basic/ UL/NLD/ILD/ISPs/OSPs/IP-1s/VSAT etc. licensees, for checking compliance to terms and conditions of their license/ registrations. LSAs also carry out the inspections of Bulk customers, ILL/IPLC customers, and V-SAT customers.

4.7.2.3 Security Vertical: -

- **Lawful Interception and National Security**:

  (i) Centralized Monitoring System (CMS) has been implemented with the approval of Cabinet Committee on Security (CCS) with Government funding of ₹400 crore. The system facilitates Ministry of Home Affairs, Central Law Enforcement Agencies (LEAs) and State Police for automated Law-full interception and monitoring process. The system has core component CMC (Centralized Monitoring Centre) at C-DOT campus Delhi with a Disaster Recovery unit at Bengaluru. The CMC is regionally connected on MPLS network with 21 Regional Monitoring Centres which in turn are connected to TSP equipment.

(ii) The LSAs are also acting as technical interface between Security Agencies and Telecom Service Providers and assist in matters related to National Security. They also help in providing information related to the Customers, CDRs, exchange records etc.

(iii). LSAs also act on various communications received from LEAs and Security Wing of DoT regarding spillage of mobile signals from neighbouring countries into Indian Territory, deactivation of mobile numbers, checking misuse of ID documents & mobile numbers, etc.

(iv). LSAs conduct monthly coordination meetings with various stakeholders for closer interaction and to resolve the issues. An Oversight Committee at DGT Head Quarter level on half yearly basis conducts meeting to resolve the pending issues.

- **GREY market/Clandestine Operations**:

(i) LSAs carry out investigation to curb illegal operations (not permitted under Indian Telegraph Act), which pose threat to National Security, in coordination with Law Enforcement Agencies (LEAs). They also take action for unearthing the illegal telecom setups based on the information received from DoT call centre Haryana and the subsequent analysis of CDRs, IMEIs and reccy of suspected premises with the help of local police, before busting the frauds. LSA field units file FIR against the culprits, pursue the case and issue notices indicating violation of conditions of various Acts.

LSAs have unearthed 11 cases of illegal set ups during the period of 01-04-2020 to 31-10-2020.

(ii) The LSAs are coordinating for handling non- genuine IMEI cases and providing support in implementation of CEIR (Central Equipment Identity Register)

- **Security Audit of TSPs and ISPs**: LSAs carry out the Security Audit of TSPs/ISPs for Security compliance of various security norms prescribed in Indian Telegraph Act and License Agreement.

LSAs have done 18 Security Audits during the period of 01-04-2020 to 31-10-2020.

- **Citizen centric approach to reduce the cybercrimes:** The citizens, when they receive a fraudulent call suspected to be a cybercrime, report the said number either to the local police authorities or on National Cyber Crime Portal. The LSA field units under the control of DG Telecom actively analyses the suspected numbers and takes necessary action after the CAF audit, connection verification, etc.,

- **URL Blocking:**

Government of India issues instructions to ban web sites, URLs and APPs which pose threat to the National Security. The LSA field units under the control of DG Telecom had successfully assessed the effectiveness of blocking of the said APPs / URLs / Websites. The feedback along with the deficiencies have been highlighted for corrective steps.

4.7.2.3.1 Projects undertaken by Security Vertical, DGT during this period:

- **Project on Covid infected person tracking portal**

The DGT office through its field offices has developed projects during the Covid-19. One of its field offices at Vijayawada has designed and developed a GIS based portal for mapping the locations of the COVID-19 infected persons for the past 15 days from the date of confirmation of disease to help the AP State Government, through the State Disaster Management Authority (AP-SDMA). The portal was designed in such a way that locations, so plotted will be restricted to places where the affected person has spent more than 15 minutes and these are color-coded indicating the alert zones. Layers have been created to categorize the severity of the red zones denoted by number of samples plotted at a particular location.

Access to this portal was provided to officials from AP-SDMA, all District Collectors of AP State and O/o Director General Police, Vijayawada. The information regarding the red zones have been further disseminated area- wise to all respective police stations and health officials thereby tracing the route of infected person will be easy without any human intervention. This project was very successful in AP State and even SDMA and police officials expressed appreciation of the portal.

- **Project on GIS mapping of CQAS system**

The DoT, in co-ordination, Centre for Development of Telematics (C-DOT) team and Telecom Service Providers (TSPs), had designed and developed CoVID-19 Quarantine Alert System (CQAS), which can be used to locate the quarantined persons, track and alert the respective State Government authorities if they cross the geo-fence.

A local interface with the State Government was developed locally by the APLSA field unit that takes the data from CQAS and sent a file every 30 minutes to the State Governments' servers. The workflow of this project is as follows:

- ❏ The mobile numbers of the quarantined persons will be shared by the Andhra Pradesh – State Disaster Management Authority (AP-SDMA) in the specified format as and when asymptomatic/ symptomatic cases are identified in AP State;
- ❏ These details will be pushed into the CQAS system to enable their tracking in the system;
- ❏ The output of the system is processed for violations and the alerts regarding geo-fence violators will be sent via SFTP to the servers of AP StateGovernment authorities for every 30-40minutes;

A locally developed a dashboard and the details received through this CQAS are integrated with the dashboard. The url for the same is https://apcovid19.e-pragati.in/.

The access to this portal was provided to officials from AP-SDMA, all district collectors of AP State and O/o Director General Police, Vijayawada. The information regarding the geo-fencing violators can be further disseminated area-wise to all respective police stations and health officials

thereby can be easily traced and again be home quarantined. This process enables tracing the quarantine violators easily without any human intervention. This project was very successful in AP State and SDMA officials expressed their appreciation for developing such system.

A locally developed a GIS platform was also extended to the State Government, for tracking these quarantined persons in near real time basis through the CQAS system. The portal provides real-time animated path of the violators; track repeated violators; creates zones etc, the link for this portal was already shared with AP-SDMA officials and feedback received was very positive and encouraging as it is possible to track violators in near real time.

- **Project on assisting State Government through CDoTSaavdhan portal**

DoT along with C-DOT developed a portal for disseminating alert SMSes to general public in a targeted manner, living in a specific area, identifiable based on Pin code, in connection with CoVID-19. This portal works on Common Access Protocol (CAP) for disseminating SMS to a targeted area based on the requests received from State Government authorities.

The work flow for this portal is as follows:

- ❏ The State Government authorities through their login credentials will access the portal and select the targeted locations either based on pin-codes or drawing polygons;
- ❏ Also, the message to be disseminated will be typed in the portal and communication language (Telugu is also available) will also be selected in the portal by the State Government authorities;
- ❏ The said message has to be approved by the DDG(Tech), APLSA Vijayawada or any other officer authorized by DDG(Tech) through his login credentials and the same shall be sent to C-DOT for dissemination; and
- ❏ C-DOT once receives the message will send it to all TSPs along with the pin codes/polygon to transmit the said message through BTSs located inthe pin codes/ polygon.

The said portal is also being used by AP-SDMA authorities to alert the public in the red zones identified through infected person tracking portal developed by DoT APLSA Vijayawada.

- **Project on comprehensive Covid-19 Mitigation System (CoMS)**

The DGT office through its field offices at Vijayawada had piloted a project for a comprehensive CoVID-19 mitigation system, using data obtained from L3 traces of the telecom service providers. The event logs will be monitored every 15 minutes for near real time monitoring. The system uses technology for evolving a people traffic movement platform. The system collects call events from TSPs, using internal techniques to identify location and to build a mapping of people with their current locations and movement. The data will be anonymized to ensure privacy protection of individuals. Only those infected persons' mobile numbers and their associated near field persons and their mobile numbers are used in the platform to further predict the population density red zones. There are four uses cases – infected person tracking; non-infected person tracking; creating

population density red zones and Quarantine fencing alerts.

- ❏ The system uses technology for evolving a people traffic movement platform. The system collects call events from licensed operators (like mobile players and ISPs), using internal techniques to identify location and to build a mapping of people with their current locations and movement. The data will be anonymized to ensure privacy protection of individuals, unless authorized by law enforcing officials, who will have a different level of security access in the platform. Only those infected person's mobile numbers and their associated near field persons and their mobile numbers are used in the platform to further predict the population density red zones.
- ❏ The system uses an AI platform and AI stack. The platform will allow solutions developers/ App developers to develop solutions/products over a standard AI stack that will improve trustworthiness levels, protect digital rights and evolve ethical standards in AI. The block for AI will be an open infrastructure that unbundles identity, signature, document and data exchange that can allow development of various apps and solutions.

This data can be captured for all the users/devices across the network on a regular basis. The device-id can then be stored in bins of 20m or user defined bin sizes. Geo-fencing or tracking/ tracing data can also be broken into similar bins and a comparison can be made to track or trace users by common bins. Since each bin denotes a certain area, distance calculations can also be made. Total number of users can be aggregated by bins to find the count of a designated area. Thus, calculating population density of CoViD infections and a predictive model to predict outbreak if any.

The data will be collected within the platform of DoT; and all data in the server is encrypted and cannot be used by anyone without the explicit approval, using the key, of DoT. DoT thus provides the infostructure (data and the platform) and the relevant data stack which can then be used by the various data analysis users.

The project has been successfully tested using the sample L3 traces submitted by the Telecom service providers. Some of the data of Vijayawada city has been successfully analysed in the portal.

- **Sample analysis on Rapid testing**

As per the DGT HQ's instructions to analyze and observe any discrepancies in the information being collected during CoVID-19 testing, an officer has been exclusively appointed by DoT APLSA Vijayawada. An app has been developed by NIC team to digitize the information collected in physical form and the access to this app has been given to few persons in each test centre who have been designated as District Managers. As per the DGT HQs letter, the forms at Siddhartha Medical college, Vijayawada need to be taken care by DoT APLSA Vijayawada office. The said officer from this office has taken login credentials from the District Manager and is scrutinizing around 25- 30% of data, on sample basis, being uploaded on daily basis.

- **Project "Telecom Analytics for Fraud management and Consumer Protection":** As part of the license conditions, the Telecom Service Providers (TSPs) on behalf of the Licensor, provide telecom numbering resources to various subscribers/ customers through a defined process which finally culminates in a Customer Acquisition Form (CAF) filled-in and stored at TSP's end on behalf of the Licensor. In this scenario, there is no scope for TSPs to check the total number of mobile connections activated against a customer across TSPs in all License Service Areas (LSAs). The size of the database being submitted to DoT LSA field units by TSPs on monthly basis will be around 60 GB. Historically, this data is being collected on normal media like CDs, etc and around 80% of the data provided is repetitive in nature on MoM (Month-on-Month) basis. Hence analyzing this data by the LSA for identifying more than nine connections will be a tedious task for the field units. Also, since the storage medium like CDs etc is delicate and easily tamperable, it is not advisable to store such data for long time considering the personally identifiable information carried in those database records.

  The Telecom Analytics for Fraud management and Consumer Protection (TAF-COP) portal can resolve all these issues easily. The portal will help in identifying individual customers with greater than nine connections and also, help in identifying the connections which are potentially suspected to be involved in cyber crimes. Thus, on implementation of this project, the veracity for reduction in frauds using telecom resources will be improved which directly protects the consumer interests.

  This project was launched by DG Telecom in the presence of Member(Technology), Digital Communications Commission on 9th December 2020.

- **Project for graphical visualisation of mobile coverage Pan-India:**

  Presently this country is predicting the mobile coverage in the country based on the information given by TSPs, which is based on just single Lat/Long in a village. If signal is available in the lat/long identified for the village in the census data, the village is mostly identified as covered. Many a times, it is observed that the coverage information so obtained also includes incidental coverage. Further this data does not reveal whether the mobile coverage is available in all the potential points of requirement (PPoR) in the village such as Schools, colleges, PHCs, Post offices, Government offices, potential accident spots, anganvadis, Ration shops, cooperative societies and so on. A village should be declared as covered only when maximum number of PPoRs in the village is having good coverage so as meet the requirement of Digital India Mission. In short only if a certain percentage of the village is covered, it should be treated as mobile RF covered.

  DGT office is developing a portal for graphical visualization of mobile signal coverage across the country. This project, thus, will also be able to better understand the coverage availability of different mobile service providers for services like Voice and Data, at different municipal entities or Point of Interests (POI's) across the country not only for villages, but also for schools, Government buildings etc. The project will take inputs from Telecom service providers; crowd sourcing apps; mathematical modelling of coverage; coverage details from CDR; inputs from

telecom robots etc in predicting the RF coverage across the country. There will also be an Artificial intelligence tool built in to predict bthe RF coverage across the country through development of a Golden Model.

On successful completion of this project, DoT may plan for covering all the left out Potential points of Telecom Requirement, either by coordinating with Service Providers or through USOF fund so as achieve blanket telecom coverage at all PPoRs.

- **'Cell on Balloons' (CoBAL) project:** Government investment in broadband infrastructure has largely leaned towards deployment of Optical Fiber Cable (OFC) networks, which are point-to-point high-speed networks and not suitable for delivery of broadband to remote and terrain constrained geographical parts of the country.

  In AP, due to inhumane terrain of Eastern Ghats and Nallamala Hill ranges, which are diversely located with scattered population, achieving mobile coverage is difficult through conventional terrestrial towers. Even the conventional towers, with 30 to 40 meters height, cannot provide mobile coverage for more than a few Kilometers.

  To reach these rural, underserved parts of the country, including those that are hard to reach due to terrain, there is a need for comprehensive broadband roll-out plan that integrates the right mix of technologies. With emerging technologies and innovation, various methods of mobile connectivity (using balloons, Low Altitude Airships, drones, Broadband over Powerline, Local Multipoint Distribution Service, etc) that hitherto proved very expensive is now affordable and compares well with OFC and can cover all communities irrespective of geographical terrain.

  Among the various popular technologies for providing connectivity in such remote areas, one of the prominent technologies is provision of mobile coverage through 'Cell on Balloons (CoBAL)'. Such technology could either be standalone or tethered. One such pilot project is being implemented in Nurmathi village of G. Madugulamandal in Visakhapatnam district. The project is a jointly coordinated with the State Government and the APFSL along with the DGT's field office at Vijayawada. It will have a tethered balloon flying at an altitude of around 500 mtrs and estimated to provide mobile coverage to around 20 villages.

  The Proof-of-concept (PoC) for this pilot project will be initially commenced with Wi-Fi payload using the balloon flying at an altitude of 50-80 mtrs and covering an area of 1km. On successful implementation of this PoC, the same shall be tested using balloon flying at 400-500 mtrs altitude and carrying different payloads including LTE, WiFi, etc.

4.7.2.4 Rural Vertical: -

- **RoW related issues:** LSA field Units are pursuing with concerned State/ UT Government for formulation of State RoW Rules aligned with Indian Telegraph Right of Way Rules, 2016. In

12 States/UTs, the State RoW Policies have been notified & are largely aligned with DoT RoW Rules. Further, in 12 states, new policy is underway.

- **For USOF/DoT funded projects**: The site survey plan for the Phase-II of the project of mobile connectivity in LWE areas. Further, LSAs have formed committee with State administration for finalization of the site location under the USOF project.

- **DBT (Direct Beneficiary Transmission):** In the LSAs Pan-India, DDG(Rural) in each LSA located at the state capitals has been nominated as the state level coordination officer from DoT for coordinating with state level banking committees(SLBCs) to resolve any network issues faced by financial institutions in providing DBT service. In this regard, LSAs are attending the SLBC meetings and coordinate with the TSPs for the resolution of the network/connectivity issues in implementation of the DBT mission.

- **National Broadband Mission (NBM) Project:**

  All the LSA field units under the control of DG Telecom have coordinated with the respective State Governments for formation of State Broadband Committee (SBC) in 34 States / Union Territories. Efforts are on for formation of SBC in the remaining 2 states namely Rajasthan and West Bengal.

  As part of this project, broadband connectivity is envisaged for each and every household in the country. The LSA field units are coordinating with the State Governments for collection of the details of all habitations, thandas, hamlets, etc., to assess the coverage status and suggest remedial measures to provide coverage to the uncovered areas as part of the mission.

4.7.2.5 Admin Vertical: -

Handling of Public Grievance (PG) cases: LSAs of DG Telecom are representing licensor in the field and complaints received through PG portal or from other sources are being analyzed and resolved by LSA field units of DoT. For the period of 01.04.2020 to 30.10.2020, approximately 2662 PG cases were received through CPGRAMS including the carry forward cases and approximately 2637 cases were disposed off during this period.

4.8 CONTROLLER GENERAL OF COMMUNICATION ACCOUNTS (CGCA)

The Controller General of Communication Accounts (CGCA) is an Apex level officer whose headquarter is in Delhi and temporarily functioning from the NICF Campus, Ghitorini, and Karol Bagh Telephone Exchange Building (MTNL) New Delhi. The post of the CGCA was created in the year 2017.

The CGCA works under the overall supervision and control of Member (Finance), DCC. The mandate of the CGCA is as follows:

4.8.1 Duties & Responsibilities of Coordination & Administration Section:

a) Coordination & Administration section is entrusted with duty of smooth coordination of all

wings of O/o CGCA.

b) Management of Staff Establishment of O/o CGCA.

c) Function of Cadre management of Non Gazetted Group 'B' Group 'C' officials, field units (Pr. CCAs/CCAs).

d) Coordination, Recruitment, Framing and amendment of Recruitment rules etc for the Group 'C' cadre.

e) Daily Monitoring of RTI cases & submission of Quarterly Reports.

f) Conducting various events to mark the occasions and moments.

g) Monitoring of court cases on LIMBS.

h) General Administration and any other functions performed etc. for the purpose of smooth functioning of this office.

i) Maintenance of service book of all the Pr. CCAs/CCAs.

j) Processing Fixation of pay, granting of leaves, promotional & retirement benefits for all Pr. CCAs/ CCAs.

4.8.2 Conducting Coordination meeting with CGCA:

Weekly review meeting was held to review work done by this office with all Jt. CGCAs and planning course of action adopted time to time with office of CGCA

4.8.3 Events Conducted:

a) Participation in Vigilance Awareness Programme.

i. The slogan of 2020 Vigilance Awareness Week was "Satark Bharat, Samriddh Bharat".

ii. Quiz competition, essay-writing competition were organized. Officers and officials took part in the said competition

b) Observance of Constitution Day/ Samvidhan Diwas.

i. Constitution day' 2020 was observed was 26th November' 2020 to commemorate the day when India adopted its constitution in 1949.

ii. All Staff of CGCA took pledge in English and Hindi by reciting the preamble of the Constitution.

c) Observance of 'Hindi Pakhwada' to commemorate the adoption of Hindi Language

i. This year Hindi Pakhwada was observed from 13.09.2020 to 27.09.2020.

ii. Two competitions were organized in "Hindi Lekhan" (i) for the officers and officials of CGCA & (ii) For Wards and children of officers and officials.

4.8.4 Compilation of Annual/Half Yearly/Quarterly/Monthly Reports.

a) Monthly/Quarterly report on Strengthening of Administration-Periodical review under FR 56 (j) and Rule 48 of CCS (Pension) Rules, 1972.

b) Compilation of Quarterly Establishment Report of all Pr. CCAs/CCAs/Jt. CCAs/NICF

c) Annual/Half yearly statement regarding representation of SCs, STs, OBCs and persons with disabilities in the central Government services.

d) Report on the implementation of reservation policy for ESM in Central Government Ministries/Department/PSUs/Banks.

e) Progress report for implementation of Prime Minister's 15 point programme for the Welfare of Minorities.

f) Compilation of Punishment Register for Group 'B' Non-Gazetted and Group 'C' staff.

4.8.5 Framing and Amendment in Recruitment Rules.

O/o CGCA is the cadre controlling authority of Group 'B' Non Gazetted and Group 'C' staff working in 'Accounts & Finance wing' of DoT. To utilize and optimize the work force in the all the unit offices, O/o CGCA is in continuous process to frame and amend Recruitment Rules. Recruitment Rules for the post of Junior Accountant have been amended and published in Gazette of India in 2020.

4.8.6 Monitoring of court cases through LIMBS.

O/o CGCA is monitoring court cases lying pending in all the O/o Pr. CCAs/CCAs/Jt. CCAs/NICF. As on date a total of 1563 court cases are lying with all Pr. CCAs/CCAs. Monitoring of all above court cases.

Monitoring DoT Building and Asset Management of field units of Pr. CCAs/CCA officers. Issuance of Administrative approval and expenditure sanction of field units estimates.

4.8.7 Internal Audit Branch of CGCA office

Background

Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes. The Internal Audit of various field and attached offices and different sections of DoT HQ/CGCA is of critical importance given the enormous financial implications of activities being handled by these offices.

Internal Audit & PG, section of the apex CGCA office, has started functioning from 2018. The section has been functioning with one Asst. CGCA, one ACAO, one AO, two AAOs, three JAs, one LDC, one Stenographer/PA and two MTSs. However, actual working strength varied from time to time.

Since its inception, the efforts and hard work of the officers and staff, who put in strenuous effort at the grass root level in building this section, paved the way for finalization and completion of various work, within a short time frame. Though, it would be difficult to summaries the achievements vis-à-vis outcome of the hard work done by the Internal Audit section, however some of it, are as under: -

Monitoring of Voluntary Retirement Scheme (VRS)-2019:

The Union cabinet in a move to revive the two Telecom PSUs had announced a revival package, which included a VRS Scheme **BSNL/ MTNL VRS scheme 2019** with effect from 01.02.2020. The Hon'ble MOC had entrusted this humongous task of settlement and timely disbursement to the Secretary Chairman DCC and Member (Finance). In keeping with the vision of our Hon'ble PM minimum government maximum governance, this monumental task of settling it across India in huge numbers was given to the 28 field offices i.e CCA s across the country.

For effective implementation of "Voluntary Retirement Scheme", with stipulated date i.e. from 01.02.2020, the following tasks were needed to be completed in time bound manner in the department of Telecommunication (i.e. Pr. CCA/CCA Offices), BSNL offices and MTNL offices:

i) Completion of Verification of Service Books of all employees of BSNL/MTNL opted for VRS, 2019.

ii) Processing and making Final Payment of GPF of all employees of BSNL/MTNL opted for VRS, 2019.

iii) Processing of Pension cases and issuing of Pension Payment Orders (PPOs) of all employees of BSNL/MTNL opted for VRS, 2019.

iv) Ex-Gratia payment of all employees of BSNL/MTNL opted for VRS, 2019.

As it was a onetime exercise which involved several stakeholders, to complete all these task in a time bound manner, a High Level Committee was constituted by DoT HQ under the Chairmanship of Additional CGCA with the following as members JT CGCA (IA), Jt. CGCA (BA&IT) and Dy. CGCA (BA&IT) and team, to monitor the processing and completion of these tasks.

The verification of Service particulars of each employee opted for VRS, 2019 was very important and initial task before finalization of pension case of a Government Servant. To complete the task of verification of Service particulars of VRS optees, heads of the CCA circles was given a target date of 31.12.2019 but not later than 15.01.2020. Due to regular and strict monitoring at the level of Additional CGCA, 99.49% of service verification work was got completed by first week of January, 2020.

As the VRS was given from 01.02.2020 to VRS optees, the final payment of GPF should be made to all VRS optees by 29.02.2020. Beyond this period interest to be paid for delayed period with the approval of the Secretary Telecom. Thus, the heads of the CCA Circle had only 29 days to make final payment of GPF to all VRS optees of BSNL/MTNL.

The third task of VRS, 2019 was pension payment to VRS optees. The Committee has also monitored

this task on weekly basis but due to total Lockdown on Pan India level in connection with COVID 19 pandemic, there has been a slowdown towards the processing of the cases, but however through the selfless efforts of CCA offices and staff despite all odds approx. 99% of cases have been settled and remaining cases, provisional pension has been issued.

Monitoring of VRS Pension Payment of VRS Optees

SL	Name of Circle	Total No. of VRS Cases for settlement	Total No. of VRS Cases received from BSNL/ MTNL	Total no. of VRS Cases settled by CCA
1	2	3	4	5
1	A& N	47	47	47
2	Andhra Pradesh	4892	4884	4854
3	Assam	1423	1423	1422
4	Bihar	1648	1646	1623
5	Chhatisgarh	581	581	581
6	Delhi (BSNL)	1752	1744	1744
	Delhi (MTNL)	3815	3815	3815
7	Gujarat	6410	6392	6392
8	Haryana	1555	1555	1550
9	Himachal Pradesh	880	879	879
10	J&K	485	485	483
11	Jharkhand	787	772	767
12	Karnataka	6056	6052	6026
13	Kerala	4543	4543	4537
14	Kolkata	1716	1708	1704
15	Madhya Pradesh	3659	3639	3633
16	Mahrastra& Goa	9997	9951	9780
17	Mumbai (MTNL)	7669	7652	7631
18	NE -I	327	326	326
19	NE-II	375	375	374
20	Odisha	1397	1390	1389
21	Punjab	2528	2522	2522
22	Rajasthan	3688	3686	3675
23	Tamil Nadu	8757	8727	8690
24	Telangana	4761	4748	4709
25	UP (E)	3509	3485	3473
26	UP (W)	2284	2280	2273
27	Uttarakhand	685	685	685
28	WB	2392	2381	2371
Total		**88616**	**88373**	**87955**

Monitoring & Review of CCA offices:

Conducting Regional Review Meeting of CCA offices frequently to monitor and review the work done in CCA offices. The Regional Review Meeting of Western Region, Central Region, and Southern Region & Northern Region have been conducted. Recently, the review meeting of Western Zone was conducted on 29.09.2020.

Transfer of SAMPANN work and its helpdesk:

The SAMPANN software along with its Helpdesk and supporting Manpower has been transferred to the office of O/o CGCA w.e.f. 01.12.2020 vide DoT HQ letter no. 2-10/2013/TA-I/DoT CGCA/2928 to 29 dtd 27.11.2020.

Pension Adalats/ National Pension Adalats:

For redressal of grievances of Pensioners, first Digital Pension Adalat was conducted on 24.11.2020 by all Telecom Circles. Monitoring of Progress of this Pension Adalat is being done by CGCA office and the cases registered in Adalat have to be settled by Telecom Circles. In addition, it is proposed to conduct Pension Adalat in the month of December 2020 as per the directions of Ministry of Personnel, Public Grievances and Pensions, Department of Pension and Pensioners' Welfare (DoPPW). The settlement of Pension cases registered in Adalats is monitored.

During Digital Nationwide Pension Adalat held on 24.11.2020, 624 cases/ grievances were received out of which 549 cases have been resolved and only 75 cases are pending in 11 Telecom Circles. Monitoring of these cases is being made by CGCA Office.

Networking in CGCA Office

Facility of Network connectivity through Optical Fiber Cable leased line with speed of 20 Mbps with WLAN is available in CGCA office. The systems in CGCA office are networked and connected through WLAN.

4.8.8 Review of State of Work Report (SWR)-

State of Work Report (SWR) is being uploaded by CCA offices in newly developed software SWR 2.0 version. The review of pending issues shown in SWR by CCA offices are being done regularly and shortcomings noticed brought to the notice of Pr. CCA/ CCA concerned for their compliance. This monthly review has resulted in reduction of arrear work of field units.

4.8.9 Monitoring of VIP reference on Pension Grievances -

During the year, 20 VIP reference on various pension grievances which were pending since long time have been settled by pursuing the cases with concerned offices/authorities of various Telecom Circles. A mechanism has been developed for monitoring of VIP references on various pension grievances to settle them with least possible delay.

4.8.10 Grievances on online CPGRAMs Portal

Regular & proper monitoring of complaints registered on CPGRAM portal including cases received from PMO is being done to dispose the complaints timely as per guidelines of PMO. The pending cases over 30 days are strictly monitored to settle them and bring down pendency to minimal.

4.8.11 Investor Awareness Programmes

Investor Awareness Programmes (IAPs) are regularly being done at CCA offices in coordination with Investor Education and Protection Fund Authorities (IEPFA) and its Partner Organization by deploying Resource Persons. IAPs are being organized for the employees retiring shortly or retired employees for making them aware about the investing of their money in maximum growth oriented institutions or funds. So far, IAPs have been successfully conducted in 11 cities/offices of various Telecom Circles viz. Guwahati, New Delhi, Ahmadabad, Thiruvananthpuram, Mumbai, Lucknow, Kolkata, Shillong, Chennai and Pune. IAPs are planned to conduct in all the CCA offices in upcoming months.

4.8.12 Implementation of Employee Information System (EIS)

Employee Information System (EIS) has been implemented in CGCA office and all the field units i.e. Pr. CCAs/CCAs for personal information and payroll of the staff of CGCA office and all the field units. It provides comprehensive structural facilities for Drawing and Disbursing Officers working in Pr. CCA/ CCA offices and CGCA. EIS package works on the concept of dual users i.e. DDO Maker and DDO checker and both registered under domain of Drawing and Disbursing Officer.

4.8.13 Development of CGCA Centralized website

A centralized website of CGCA (http://cgca.gov.in) has been developed and soft launch of the website done. The website contains information and other frequent activities being performed by CGCA office and its field units i.e. all Pr. CCA/CCA offices. The domain name cgca.gov.in has also been renewed and is valid upto 08.10.2022. Proposal for development of Mobile App for CGCA website is under consideration.

4.8.14 Information on various trainings imparted in the year 2020-2021:

- Advance Excel Tools & Techniques
- Workshop on NPS
- Induction training of AAOs
- Workshop on GeM at NICF
- Training on Public Procurement at NIFM
- Workshop on PFMS at NICF
- Workshop on GST, NICF
- Workshop on Internal Audit
- User Training on SARAS

- Workshop on Advance Excel
- Workshop on Gender sensitization at DoT HQ
- Workshop on Spectrum Auction and Pricing
- Workshop on SAMPANN.

4.9 CONTROLLER OF COMMUNICATION ACCOUNTS (CCA) OFFICE

There are 32 Accounting units (4 Pr. CCAs, 24 CCAs, 1 NICF (National Institute of Communication Finance), 1 TEC, 1 PAO (HQ) and 1 TDSAT) located across the country. The Pr. CCA/ CCA Offices play a vital role as a critical interface between DoT and its stakeholders to consolidate the role of DoT at the field level on various issues such as collection & assessment of license fee, spectrum usage charges and its management, pension authorization and disbursement, USO (Universal Service Obligation) Fund management, USO activities progress and review inspection etc. and carries out different services to the PSUs (Public Sector Undertaking), Consumer pensioners, general public and other DoT field units etc.

4.9.1 Important Initiatives Taken

Rollout of Sampann for Over 90,000 New Telecom Retirees

SAMPANN (System for Accounting and Management of Pension): SAMPANN(www.dotpension.gov.in), the brand name of the CPMS (Comprehensive Pension Management System) was dedicated to the nation by Hon'ble Prime Minister on 29th December 2018 at Varanasi. It is a major e-governance reform enabling direct credit of pension into pensioners' bank accounts for all new telecom retirees thus realizing the goal of "Sanchar Pension, SeedhaVitaran" and replaces the intermediary agencies. This is line with the policy for encouraging "Minimum Government, Maximum Governance" and Paperless, Cashless and Faceless services across the country.

It is a seamless online pension processing system through integrated software, which brings the processing, sanctioning, authorization and payment units under a common platform and provides a host of online facilities to pensioners through the SAMPANN Website and Mobile App.

In the earlier system of pension payments for telecom pensioners, pension for 3.5 lakh DoT and BSNL retirees had been sanctioned and authorized by the CCA (Controller of Communication Accounts) Offices. The pension was thereafter disbursed on commission basis by intermediary agencies - Banks and Post Offices (PO)-to the pensioners.

SAMPANN provides pensioners the updates regarding the progress of the pension processing via Mail and SMS. Pensioners can also check their monthly statement in their pension account at the SAMPANN website regarding any transactions for pension, Arrears, TDS etc. Pensioners are not required to follow up with different authorities. With the SAMPANN App and Website pensioners can monitor and check the current status of his pension from the comforts of their homes without requiring to visit different offices while providing greater transparency in pension governance.

Unlike the earlier system where pensioners were expected to visit the Bank to collect the PPO and receive the first pension in person, PPO copies are dispatched or alternatively downloadable e-PPOs are available in the pensioners' online account. Pensioners can register their queries, grievances and track them on the SAMPANN website/mobile app/ helpline or email their grievances conveniently without physical commute.

As on 4/12/2020, 99497 Pensioners are on-board SAMPANN and Rs. 7168 crore has been paid through portal directly into the pensioners' accounts. Due to implementation of SAMPANN, the Department will be able to save ₹7.2 crore annually hitherto paid to the bank as commission.

A toll-free helpline facility for the pensioner is also being established at DoT(HQ) along with a centralised Helpdesk for all Pr. CCAs/CCAs offices to resolve out the grievances and issues as raised by pensioners and users at Pr. CCAs/CCAs offices. The Helpdesk ensures proper record management facility also for the issues raised during the month and the solution provided for the same. It also provides assistance in implementing any policy decisions or guidelines as issued by department at each Pr. CCAs/CCAs level. The main agenda of Helpdesk is to give a hassle-free experience to all the users on SAMPANN whether it is pensioner or any other officer/official at Pr. CCAs/CCAs level.

4.9.2 Settlement of Pension and Terminal Benefits of BSNL/MTNL VRS 2019 Retirees by CCA (Controller of Communications Accounts) offices

As a part of the revival plan of BSNL and MTNL approved by Union cabinet on 22nd Oct 2019, Voluntary retirement was offered to existing employees of BSNL and MTNL. For this, the window for application for the scheme was **opened till 3.12.2020.** Following this, 92156 BSNL and MTNL employees were granted retirement under Voluntary retirement scheme 2019 (VRS 2019) with date of retirement 31.1.2020. (details as under:)

S No	PSU	Category	No of VRS retirees
1	BSNL	Combined service optees	77123
		Direct recruits	646
	BSNL-Total		77769
2	MTNL	Combined service optees	11482
		Direct recruits and Pro –rata pensioners	2905
	MTNL-Total		14387
3	Total		92156

For these employees, following benefits were to be given as per VRS 2019 by CCA offices:

Benefits to be delivered by CCA office	Category
Pension, deferred Gratuity and Commutation	All Combined service optees of BSNL and MTNL i.e. 88605 personnel
Budgetary support for ex gratia	All VRS retirees of BSNL and MTNL i.e. 92156 personnel
GPF Final Payment	Combined service optees of BSNL i.e. 77123 personnel

It is to mention that VRS 2019 scheme was special as while annual retirement from DoT has been around 18,000-20,000; under VRS 2019, retirement benefits were to be given to over 88605 Pensioners.

In order to achieve above benefits in their timeline, several measures were taken by CCA offices in close coordination with BSNL and MTNL. These were closely monitored and steered by the high level committee headed by Additional CGCA (Controller General of Communication Accounts). As part of the action taken thereafter, Accounts wing is involved in-

Issue of PPO and timely payment of pension including Gratuity and Commutation for Combined service optees of BSNL and MTNL.

Settlement of GPF final payment for BSNL Combined service optees (The GPF Final payment for MTNL is to be done by MTNL only).

Providing bud getary support for payment of Ex Gratia to all VRS optees of MTNL and BSNL.

With the effort of CGCA office, CCA offices and Accounts wing,

Out of 77123 cases,76798 GPF final payment had been made by 29.02.2020. As on 6.3.2020 (prior to lockdown), total 77018 out of 77123 Cases were settled. As on 13.11.2020, except for 4 cases which are held on account of administrative/court matter, all cases have been settled.

In order to expedite pension settlement, BSNL was brought onboarded SAMPANN (System for Accounting and Management of Pension)(www.dotpension.gov.in). The processing of MTNL Pension was done using FMS software which is maintained by MTNL. These cases were settled by CCA Mumbai and CCA Delhi.

As on 13.11.2020, except for 639 cases, all pension cases are settled. The remaining cases are pending mostly on account of vigilance/ court matter.

Ex gratia amount amounting to ₹14889.65 crore (around 92% of total ex gratia) has been paid. The finalisation of ex gratia amount is in the final stages following which the remaining amount shall also be disbursed and subject to availability of budget.

Under BSNL/MTNL VRS 2019, it was ensured that all pensioners were paid pension starting from the month of Feb 2020 (date of retirement being 31.1.2020) without any disruption.

Overall 99.5% of GPF cases (i.e. over 76700 cases out of 77123) were settled within 1 month and 99% of Pension cases (i.e over 87700 cases out of 88605) were settled within 6 months which is unprecedented in Government of India.

4.9.3 Migration of Telecom Pensioners Taking Pension from Bank/CPPCS onto Sampann

After rollout of SAMPANN for new retirees, the pensioners already drawing pension from Bank and Post offices are to be migrated. In this regard, the pilot project for migration of telecom pensioners taking pension from Bank/CPPCs onto SAMPANN has been completed during period Aug 2020-Nov 2020. Over 600 pensioners have been migrated to SAMPANN platform as a part of pilot as on

30.11.2020 and the pilot is being extended for further migration of pensioners.

4.9.4 Rollout of Employee Information System (EIS)

In order to streamline the processing of salary, All Pr. CCAs/CCAs offices were on-boarded on EIS portal for drawal of salary w.e.f July,2019. Thereafter, EIS has been successfully rolled out in all other DoT field units, completing the rollout, in June 2020.

To make the concept of Employee Information System (EIS) feasible and accessible in all Pr. CCAs/ CCAs offices and to make the users well-versed with the software, a centralised Helpdesk is created at DoT(HQ) to provide assistance to all Pr. CCAs/CCAs offices on how to use the portal for drawal of salary effectively for a particular month and to resolve out the queries/issues as raised from time to time.

4.9.5 Disbursement of Terminal Benefits

Pension: With the promulgation of Rule 37(A) along with Rule 37 of the CCS Pension Rules, the government plays a critical role in the disbursement of pension to officers and officials of DoT and the erstwhile government servants absorbed in BSNL and MTNL. The CsCA Units are responsible for budgeting of pension expenditure, Sanction, authorization and disbursement of retirement benefits on CDA and IDA scale to over 3 lakh pensioners. The updated figures are as under:

Financial Year	No. of Pensioners (in lakh)	Pensioners Pension Disbursed (In crore)
2017-18 (as on March 31st, 2018)	3.24	₹10804.89
2018-2019 (as on March 31st, 2019)	3.69	₹11991.15
2019-2020 (as onMarch31 ,2020)	4.39	₹13138.81

Pension Adalat: O/o CGCA office conducted 1st All India Digital Pension Adalat on 24.11.2020 keeping in view Covid -19 in close coordination with CCA office. Additionally, Pension Adalat are being organized regularly every quarter by the CsCA offices.

4.9.6 Other Key Initiatives

4.9.6.1 PFMS (Public Financial Management System)

Department of Telecommunications implemented PFMS from 1st January, 2017. The Budgeting, accounting, processing and movement of bills and payment through designated banks have been automated in all the CCA offices.

4.9.6.2 NTRP (Non-Tax Receipt Portal)

The Non-Tax Receipt Portal (NTRP) an initiative of the M/o Finance to provide one stop services to deposit any fees/fine/other money into the Government Account. It aims to provide 24X7 year-round electronic services to deposit the money into Government Account using internet based payment

technologies to the users at the doorstep through the web-based portal.

The Department of Telecommunications has also integrated its receipts through Bharatkosh portal for Telecom receipts and is being used as Payment portal for its receipts to achieve the mandate of Government for 100% Digital receipts. The Electronic Receipt (e-receipt) system for accounting of DoT revenue has been enabled 100% in DoT HQ and all the CCA offices w.e.f 1st January 2017.

A Centralised PFMS/NTRP Helpdesk is established at DoT(HQ) to assist the Pr. CCAs/CCAs offices and customers making payment through PFMS-NTRP portal and to co-ordinate with O/o CGA for making any changes/modalities in the PFMS-NTRP system so as to provide ease of working to all the users and resolving out their grievances.

4.9.6.3 Accounts

The Controller of Communications Accounts (CCA) office is the basic unit of departmentalized accounts organization and performs the PAO (Pay and Accounts office) and DDO (Drawing and Disbursing office) functions for field offices like TERM, WMO, RLO etc. Preparation and submission of the accounts has been digitalized through the implementation of PFMS. The work related to preparation of SCT (Statement of Central Transactions), Appropriation Accounts, Finance Account of DoT, review of monthly accounts, RBI balances reconciliation for DoT field units are being coordinated at the Ministry level in DoT HQ.

4.9.6.4 Other activities

4.9.6.4.1 Pension Contribution and leave Salary: The CCA offices carry out the functions of collection, scrutiny and monitoring of the amounts to be received as pension contribution and leave salary by the government.

4.9.6.4.2 GPF & Long Term Loans Accounting: The DoT maintains and accounts for the GPF, long-term loans and advances and their recovery/accounting for BSNL. The system for direct payment of GPF was implemented in all the circles to replace the reimbursement system to create ease of accounting and cut down delay for the payments for the PSU employees.

4.9.6.4.3 Audit Function: Under the restructured Internal Audit system of DoT, the Internal Audit Section of DoT HQ carries out the Internal Audit Inspection of DoT (HQ) Wings and CGCA. In addition, it carries out a periodic review of the operational issues, guidelines, reports / MIS as submitted by the O/o the CGCA to DoT.DoT IA section also coordinates the corrective action on the pending Part-II B paras with DoT HQ wings, in the audit conducted by O/o DG of Audit.

4.9.6.4.4 Pension Voucher Audit Functions: CCA offices carry out post audit of pension and pensionary benefits disbursed by the designated banks (CPPCS) and post offices.

4.9.6.4.5 Functioning as CPIOs Under RTI Act, 2005: Officers in the offices of CCA have been designated as Central Public Information Officers (CPIO)/ Appellate Authorities for ensuring smooth

provisioning of information under the RTI Act 2005.

4.9.7 Assessment of Licence Fees

The assessment of licence fees at the end of the financial year is based on the revenue figures as per the audited accounts of the company. The company is allowed to deduct Public Switched Telecom Network (PSTN) charges, Roaming charges passed on to eligible / entitled service providers and Sales Tax / Service Tax passed on to the State / Central Government from its total revenue. The sum so arrived at after these allowable deductions is called Adjusted Gross Revenue (AGR). The licence fee is currently levied at 8% of this Adjusted Gross Revenue (AGR), inclusive of USOF levy which is presently 5% of AGR.

Licence Fee is payable in four quarterly installments during each financial year. Quarterly installment of licence fee for the first three quarters of a financial year is paid within 15 days of the completion of the relevant quarter. However, in respect of last quarter of the financial year, the licence fee has to be paid by 25th March on the basis of expected revenue for the quarter, subject to a minimum payment equal to the revenue share paid for the previous quarter. Further, balance of amount payable and already paid has to be submitted by April 15th. To avoid penalty total License Fee paid shall not fall short of License Fee payable by more than 10% and this difference can be settled till May 30th of the following year.

For telecom networks licensed for Captive use and Captive Mobile Radio Trunking Service (CMRTS) licences, the license fee is levied at fixed rates depending upon the number of terminals, channels and / or network's capital cost.

4.9.8 Trend of Licence Fee Collections

The trend of licence fee collections for the last five years is given below:

(In crore)

Year wise Licence Fee Collections**					
F.Y	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Amount	₹15771	₹15615	₹13262	₹11134	₹39648

***The above figures are as per e-lekha.*

4.9.9 Revenue Management System (SARAS)

The Revenue division of DoT, consisting of License Finance and Wireless Planning Finance division, has taken up an initiative to ease and automate the current telecom revenue reporting, assessment and payment mechanism.

A Revenue Management Software (RMS)-SARAS (System for Assessment of LF Revenue and SUC) is accordingly being implemented, which would digitise the assessments, payment and accounting of

license fees, spectrum usage charges etc. along with all ancillary processes. It would be a web based application, and would enable the Licensee to make online payments, digitally file and verify deduction claims, AGR statements, bank guarantee details along with enabling the Department to conduct online assessment of LF and SUC, management of bank guarantees, handle representations etc.

The Project is being implemented by M/s NSDL E-Governance as System Integrator and E & Y LLP as Project Management Unit (PMU).

Special Audit

To ensure the Protection of Govt Revenue, DoT conducted Special Audit for 11 TSP's for F.Y 2011-2012 to 2017-18 under Clause 22.5 to 22.6 of License Agreement. The CA firms were selected through a transparent bidding process and Reports of Audit are in final stage of submission.

LF Assessment has been completed and Demand Notices issued to the TSPs generally up to F.Y. 2016-17.

The Hon'ble Supreme Court vide its judgement Dt 01.09.2020 has directed that the concerned Telecom Operators shall make payment of 10% of total dues as demanded by DoT by 31.03.2021 and also directed that TSP's have to make payment in yearly installment commencing from 01.04.2021 up to 31.03.2031 payable by 31st March of every succeeding financial year.

4.9.10 Judgment of the Hon'ble Supreme Court in the Adjusted Gross Revenue (AGR Case).

Adjusted Gross Revenue (AGR) forms the basis for calculating License Fee (LF) and Spectrum Usage Charges (SUC) levied on telecom service providers (TSPs). The long-pending dispute regarding the definition of AGR concluded with the Hon'ble Supreme Court's judgment of 24.10.2019, which upheld the stand of the Department of Telecommunications (DoT) on the issue. The Hon'ble Supreme Court also directed the TSPs to make payment of the dues within 3 months of its order (dated 24.10.2019).

Subsequently, pursuant to the approval by the Union Cabinet, DoT filed a Miscellaneous Application before the Hon'ble Supreme Court seeking the court's permission to allow the telecom licensees impacted by the judgment of 24.10.2019 to pay the unpaid or remaining to be paid amount in annual instalments over 20 years (or less if they so opt), duly protecting the net present value of the said dues. The Hon'ble Supreme Court considered the DoT's Miscellaneous Application along with some other legal issues that arose during the course of the implementation of the judgment of 24.10.2019 in the course of several hearings.

In its judgment dated 01.09.2020, the Hon'ble Supreme Court has, inter alia, directed that the TSPs shall, in the first instance, make the payment of 10% of the total dues as demanded by DoT by 31.03.2021. The Hon'ble Supreme Court has also allowed the TSPs to make payments in yearly instalments commencing from 01.04.2021 up to 31.03.2031, payable by 31st March of every succeeding financial year (i.e, in 10 instalments), subject to certain conditions. The judgment dated 01.09.2020 is also available on the website of the Apex Court.

4.9.11 Spectrum Usage Charges(SUC) & other receipts

Spectrum Usage Charges (SUC) & other receipts for Annual Report 2020 -21 is as under:

Nature of Receipts	April 2020 to Oct. 2020 (Actual revenue for 7 months)	Anticipated receipts Nov. 2020 to March 2021 (expected revenue for 5 months) (FY 2020-21)	Total receipts in the Financial year 2020-21
Spectrum Usage Charges (SUC)- CDMA	0.59	0.42	1.01
Spectrum Usage Charges (SUC)- GSM+BWA +VSAT	3035.53	2168.23	5203.76
Total SUC	3036.12	2168.65	5204.77
Spectrum Auction receipts (Upfront Payments)	0	6692.00	6692.00
Spectrum Usage Charges receipt on account of SC AGR judgement	0	2500.00	2500.00
WPC receipts (DDs/e-receipts through NEFT, RTGS/Bharatkosh)	272.78	194.84	467.62
Grand Total	**3308.90**	**11555.49**	**14864.39**

4.10 FOREIGN INVESTMENT POLICY & PROMOTION (FIPP) :

The new FDI policy 2020 and DPIIT SOP have been recently issued by Department for Promotion of Industry and Internal Trade (DPIIT) with regard to Telecom sector stipulates the provisions of allowing 49% FDI under automatic route and beyond 49% up to 100% under the Government approval route subject to observance of licensing and security conditions by licensee as well as investors as notified by the Department of Telecommunications (DoT) from time to time, except "Other Service Providers", which are allowed 100% FDI on the automatic route. In this respect, the Table below may kindly be seen:

Current policy with respect to FDI in Telecommunication sector

Sector/Activity	% of Equity/ FDI Cap	Entry route	Other Conditions
All Telecom services including Telecom Infrastructure Providers Category-I, viz. Basic, Cellular, Unified Access Services, Unified license (Access services), Unified License, National/International Long Distance, Commercial V-Sat, Public Mobile Radio Trunked Services (PMRTS), Global Mobile Personal Communications Services (GMPCS), all types of ISP licenses, Voice Mail/Audiotex/UMS, Resale of IPLC, Mobile Number Portability services, Infrastructure Provider Category – I (providing dark fibre, right of way, duct space, tower) except Other Service Providers.	100%	Automatic up to 49% Government route beyond 49%	FDI in Telecom Sector is subject to observance of by licensing and security conditions by licensee as well as investors as notified by the Department of Telecommunications (DoT) from time to time, except "Other Service Providers", which are allowed 100% FDI on the automatic route.

Source: Consolidated FDI Policy, 2020

Upon abolition of Foreign Investment Promotion Board (FIPB) in May 2017, the process for approving foreign investment is being dealt with by the concerned administrative Ministries/Departments. For the Telecom Sector, the Department of Telecommunications, Ministry of Communications is responsible for according approval under the FDI Policy. Suitable systems and mechanisms have been put in place to handle this and Foreign Investment Policy & Promotion (FIPP) Wing of the Department of Telecommunications deals with the work related to processing of cases seeking to bring in Foreign Direct Investment (FDI) in the telecommunications services sector. In this regard, it coordinates with the other wings/divisions of the DoT and also other Ministries/Departments of Government of India and Regulatory bodies like SEBI, RBI etc.

Total FDI inflow into telecommunications sector during April, 2000 to September, 2020 was ₹219,238 crore. Telecommunications is the third largest sector in terms of FDI inflows after Services sector and Computer software and hardware sector as given in Table below: -

Table: Top Three sectors attracting highest FDI equity inflow (Amount in ₹crore)

Rank	Sector	2018-19	2019-20	2020-21 (April – Sept.)	Cumulative inflows (April 2000 to Sept'20)	%age to Total inflows
1	Services Sector*	₹63,909	₹55,429	₹16,955	₹4,88,685	17
2	Computer hardware and software	₹45,297	₹54250	₹1,31,169	₹4,07,175	12
3	Telecommunications	₹18,337	₹30,940	₹50	₹2,19,238	7

Source: FDI Statistics have been taken from official website of Department for Promotion of Industry and Internal Trade (DPIIT) i.e. dipp.gov.in

** Services sector includes Financial, Banking, Insurance, Non-Financial / Business, Outsourcing, R&D, Courier, Tech. Testing and Analysis, Others*

Foreign Direct Investment(FDI) is an important component of economic growth and an important vehicle for the transfer of technology. It also brings with it considerable benefits through raising productivity, strengthening infrastructure, enhancing competitiveness of the domestic economy and generating new employment opportunities. The telecom sector which grew largely in the recent past has also helped the other sectors to grow through diffusion of information and ideas. Since the telecommunication industry is capital intensive and heavily dependent on technology, FDI in telecom holds the promise of accelerating its growth.

Integrated Finance Division:

IFD coordinate with GeM on SCoGeM platform:

On the Platform of the Standing Committee on GeM (SCoGeM), IFD regularly reviews the payments that are pending beyond 30/60 days, identifications of products required, which are currently not on GeM, for listing in GeM. IFD reviews procurements through GeM, including payments, and report to GeM SPV wherever action is required and monitors timely payments to suppliers by procuring agencies. It organizes training programs for staff regularly and periodic interaction sessions with GeM officials to ensure efficient procurements on GeM. IFD also monitors the use of GeM by all agencies and offices attached to the Ministry/Department and ensure cost efficient procurement.

IFD is the nodal wing for OCMS portal.

This is regarding uploading/updating of details of Infrastructure and Project (more than ₹150 crore.) on "Online Computerized Monitoring System (OCMS)" **of Infrastructure and Project Monitoring system (IPMD) of the Ministry of Statistics and Programme Implementation (MoSPI).** IFD is the nodal wing for OCMS portal on behalf of DoT and Director(F) is the nodal officer for the same from DoT.

Status of USO Fund:

Universal Access Levy (AL) amounting to ₹1,12, 029 crore has been collected and the total allotment amounting to ₹56,328.45 crore received through Parliamentary approvals has been utilized to fulfil the objective of USO Fund. The balance of UAL amount available as potential fund under USO, at the end of November 2020 is ₹ 55700.37 crore.

Details of subsidy disbursed under Universal Service Obligation Fund during the FY 2020-21 & current financial year:

	Amount proposed to be Disbursed during 2020-21	Amount Disbursed in 2020-21 (upto November 2020)
Amount Disbursed under USOF subsidy	8000 (BE) 7200 (RE)	4305

4.11 BUILDING WORKS DIVISION

P&T Building Works Group 'A' Service is an organized Group 'A' service of Department of Telecommunications (DoT) under Ministry of Communications. The service comprises of three disciplines viz. Civil, Electrical & Architecture. The service is common for both, Department of Telecommunications (DoT) and Department of Posts (DoP). DoT is the Cadre Controlling Authority in respect of Group 'A' officers working in DoT & DoP.

The officers are recruited to this service through Engineering Services Examination conducted by the Union Public Service Commission on yearly basis. The officers recruited to this service are deployed in DoT and DoP under the Ministry of Communications.

In year 2010, the then Hon'ble MoC&IT gave approval for setting up of National Telecom Academy to operate under the supervision and control of Sr. DDG (TEC). It was decided that this academy will operate from ALTTC Ghaziabad. The Academy started its training activities in January, 2011. The Academy was renamed as National Telecommunications Institute for Policy Research, Innovation & Training (NTIPRIT) in March 2011 with enhanced scope of activities of academy besides meeting training needs of DoT officers.

The institute is the focal point of training activities for technical cadre within the Department of Telecommunications, Ministry of Communications, Govt. of India and is responsible for identification of suitable training programs, regulation of nominations of trainees and preparation of the Annual Training Calendar.

During 2020-21, the induction training of 2 (Two) P&T BWS (Gr 'A') Civil Probationers of 2017 batch were conducted in NTIPRIT.

Cadre Review of P&T BWS Group 'A' has recently been completed and with the approval of the Union Cabinet, it has been decided that there will be no fresh recruitment into P&T BWS cadre and the cadre will be phased out in such a manner that there is no adverse impact on the incumbents.

CHAPTER 5

Public Sector Undertakings and Autonomous Bodies

5.1 BHARAT SANCHAR NIGAM LIMITED(BSNL)

5.1.1 Role and Functions: Bharat Sanchar Nigam Limited (BSNL) was formed on 1st October 2000 by Corporatisation of the erstwhile Department of Telecommunications Operation & Department Telecom Services. The company has taken over the erstwhile functions of the Department of Telecommunications in respect of provisioning of telecom services across the length and breadth of the country excluding Delhi and Mumbai. BSNL has work force of around ***65,296 as on 01-12-2020***. BSNL is a 100% Govt. of India owned Public Sector Undertaking.

BSNL is a technology-oriented company and provides all types of telecom services namely telephone services on wireline, WLL and Mobile, Broadband, FTTH, Internet, leased circuits and long distance telecom Service.

The company has also been in the forefront of technology with 100% digital new technology switching network. BSNL's nation-wide telecom network covers all District headquarters, Sub-Divisional headquarters, Tehsil headquarters and almost all the Block Headquarters.

5.1.2 Highlights

The details of physical achievements for the year 2020-21 of BSNL are given as under:

Achievement during Financial Year 2020-21 (up to 30.09.2020)

S.No	Item	Unit	Year 2020 - 2021		
			Status as on 01.04.2020	Status as on 30.09.2020	Achievement up to 30.09.2020
1	Total Telephone Connection	Lakh	1285.18	1265.97	(-) 19.21
1 (a)	Wire-line	Lakh	87.27	77.40	(-) 9.87
1 (b)	Mobile	Lakh	1197	1188.57	(-) 9.34
2	Total Switching Capacity Mobile	Lakh Lines	1427.36	1420.45	(-) 6.91
3	Broadband Connection (Wireline +Wireless)	Lakh	258.65	257.46	(-) 1.19
4	Rural Telephone Connection	Lakh	394.81	400.40	5.59

5.1.3 Financial Performance:

The details of profit / loss for the year 2017-18, 2018-19, 2019-20 & 2020-21 (up to 30.09.2020) are as under:

(Figures in ₹crore)

Financial Year	2017-18	2018-19	2019-20	2020-21 (UP TO 30.09.2020)
Total income	25,071	19,321	18,907	8,761
Total expenditure	33,809	34,225	34,406	12,368
Net profit	(-) 7,993	(-) 14,904	(-) 15,500	(-) 3,606

Note: - Figures for Financial Year 2020-21 are un-audited.

5.1.4 Telecom Factories:

BSNL Telecom Factories are In-house manufacturing units of the BSNL and located at Kolkata, Gopalpur, Kharagpur, Jabalpur, Bhilai, Richhai and Mumbai. Telecom Factory Mumbai is 18001:2007 OHSAS certified. Telecom factories were manufacturing PLB HDPE Telecom Duct, Splice Closures, SIM Card, OFC Accessories, SS Drop wire, Jointing Kits, LJU cum Splicer, CT Box, Towers and other conventional items; however, post VRS, these factories are primarily manufacturing PLB HDPE Ducts.

Amidst constraints of non availability of fund, and reduced work force, telecom factories have produced to meet the requirement of various telecom goods of the BSNL field units during the year 2020-21. During the period from April, 2020 to December, 2020, Telecom Factories have supplied around 13,480 Kms of PLB HDPE Ducts and a major portion of this has been supplied for Bharat Net Project of Govt. of India. In financial terms, Telecom Factories have achieved Rs. 68.67 crores during the year (April 2020-Nov 2020). Details are as under: -

Factory Name BA	Target for 2020-21	Achievement April 2020 to Nov. 2020 (Amt. in ₹crore)
Kolkata	70	33.93
Jabalpur	72	24.39
Mumbai	82	10.35
Total	**224**	**68.67**

The quantitative performance of Telecom Factories during April 2020 to Nov. 2020 is as under:

Items	Program (2020-21)	Supply (April 2020 toNov.2020)
PLB HDPE Duct (Kms)	37,000	13480
Splice Closure	1,50,000	-
SS Drop Wire (Kms)	1,600	-
SIM Card	75,00,000	-
Jointing Kits	15,000	-
Jumper Wire (km)	-	125

5.1.5 Restructuring of Telecom Factories: -

With effect from 1st Feb 2020, Telecom Factory Circles (Kolkata, Jabalpur and Mumbai) have been converted into Business Areas and have been merged with the respective territorial circles.

5.1.6 Training and other events

On Job Training (Staff Trained): BSNL has 18 Telecom Training Centres countrywide comprising of three APEXtraining centre's namely:

- Advanced Level Telecom Training Centres (ALTTC), Ghaziabad.
- Bharat Ratna Bhim Rao AmbedkarInsitute of Telecom Training (BRBRAITT), Jabalpur.
- National Academy of Telecom Finance and Management (NATFM), Hyderabad.

BSNL Staff attended various in-service courses / workshops / FTPs / Webinars conducted by various Training Centers. As per report retrieved from CTMS portal for the period April 2020 to November, 2020, total number of 16,946 staff was trained (14189 executives and 2757 non-executives) during this period through various training centres for total of 201584 mandays (171121 mandays for executives and 30463 mandays for non-executives).

5.1.7 International Relations

- **Foreign Deputation**: During April to Nov 2020, no staff was deputed due to COVID-19.
- **International Training Conducted at BSNL Training Centres**:
- **ITU Trainings:**
  - ✓ ALTTC selected as ITU Centre of Excellence for Asia-Pacific Region for 2019-22 (4 Years) in three areas i.e Fixed and Wireless Broadband, Internet of Things, Cyber Security
  - ✓ ALTTC conducted 5 trainings during Apr 2020 to Nov 2020 in following areas:
    - Digital Infrastructure
    - Data Protection frame work with Security Policy and Audit
    - IoT Sensors and Network for Disaster Communication
    - IoT Advance Applications Smart City & Industry 4.0
    - Advance Broadband Network QoS and Applications.
- **APT Trainings:**

  Asia Pacific Telecom (APT) allotted 2 Training programs to BSNL for period April 2020 to Nov 2020 in the following areas:

  - RGMTTC, Chennai: Spectrum Management and Monitoring
  - ALTTC: Cyber Network Defense and Cyber Laws

- **Induction Training**:

  Conducted induction training for directly recruited/promoted candidates of various cadre i.e. Sr.TOA, TTA (now JE), JTOs, JAOs.

- **Training Revenue**: BSNL training centers provide wide range of training programs to various levels of non-BSNL trainees, viz., students/individuals, Govt. or Pvt. Organizations, etc on payment basis by optimum utilization of training resources.

  Revenue of ₹12.91 crore was generated during the period April 2020 to Nov 2020 by imparting training to non BSNL trainees and by sharing of training infrastructure.

5.1.8 Skill Development:

✓ **Skill Development Scheme of State Governments:**

- RGM TTC Chennai & Tamilnadu Circle is conducting Skill Development training with TNSDC. 1250 candidates have been trained under this scheme.
- RTTC Trivandrum, Kerala Circle has bagged the contract from KASE for skilling candidates under CSSM scheme of PMKVY 2.0 Program. 90 candidates have been trained.

5.1.9 Development Of Telecommunication Facilities In Selected Areas

5.1.9.1 Special Component Plans: Annual Plan of BSNL pays special emphasis on accelerated growth of telecommunication facilities under Special Component Plans in North Eastern Region.

5.1.9.2 Network Status of NE Region States: - The status of telecom facilities as on 31.08.2020 in each of the state of North East Region is shown in the following table: -

S. No.	Name of State	Telephone Exchange (Wire-line)	Total Capacity (Wire-line + Wireless) in Lakh Line.	Total DELs (Wire-line+ Wireless) In Lakh.	Broadband Connection (Wire-line) In Nos.	VPTs In Nos.
1	**Assam**	**545**	**24.879**	**29.538**	**38,730**	**105**
2	**NE-1**	**184**	**18.394**	**10.255**	**31,444**	**513**
2 (a)	Meghalaya	49	6.465	3.359	31,444	279
2 (b)	Mizoram	55	3.410	2.441		12
2 (c)	Tripura	80	8.519	4.456		222
3	**NE-II**	**188**	**13.074**	**4.204**	**18,940**	**1,539**
3 (a)	Arunachal Pradesh	84	5.736	2.138	18,940	1,054
3 (b)	Manipur	43	3.896	1.150		418
3 (c)	Nagaland	61	3.443	0.916		67
4	**Sikkim**	**32**	**1.561**	**0.502**	**2,157**	**376**
	NE Region	**949**	**57.908**	**44.499**	**91,271**	**2,533**

5.1.9.3 Development Status: -Achievement during the year 2020-21 (up to 31.08.2020) for the North East Region are as follows: -

S.No	Items	Status as on 01.04.2020	Status as on 31.08.2020	Achievement up to 31.08.2020
1	Total Switching Capacity (Lakh Line)	57.15	57.91	0.76
1 (a)	Wire-line	8.80	8.83	0.03
1 (b)	GSM	48.35	49.08	0.73
2	Total Telephone Connection(Lakh)	44.69	44.50	(-) 0.19
2 (a)	Wire-line	1.91	1.80	(-) 0.11
2 (b)	Mobile	42.78	42.70	(-) 0.08
3	Broadband (Wireline Connection) in Lakh.	0.865	0.913	0.048
4	VPT (Nos.)	2,657	2,533	(-) 124

5.1.9.4 Tele-density: Status of telephone connections in N.E Region and the tele-density State/Circle-wise as on 31.08.2020 are given in the following table:

Name of State	Projected Population as on 31.08.2020 (in thousand)	Telephone connection of BSNL	Teledensity due to BSNL's phones	Teledensity by All Operators	% Market share of BSNL
Assam	35,745	29,53,796	8.26	66.42	12.44
NE-1	8,395	10,25,546	12.22	78.71	12.03
NE-II	6,879	4,20,448	6.11		
Sikkim	608	50,161	8.25	*	*
Total NE Region	**51,627**	**44,49,951**	**8.62**	-	--

**The figure of tele-density by all operator and market share for Sikkim is not available separately as this information is compiled for LSA viz. West Bengal.*

5.1.10 Welfare Measures/ Facilities/Sports Undertaken by BSNL

BSNL is running various welfare programmes for its employees and their family members as part of BSNL's welfare measures. An amount of ₹5 crores has been allocated for various welfare programme for the year 2020-21. Grant will be released within next three months i.e. January-March 2021.

Some of the salient welfare schemes are listed below: -

1). Grant of scholarships / Book Awards to the wards of the BSNL Employees.

2). Farewell function is organized for employees retiring on superannuation/ VRS. Due to epidemic Covid 19, the farewell function was postponed till further orders.

3). Immediate financial assistance of ₹20,000/-to the family of the BSNL employees who died in harness irrespective of basic pay.

4). Special Dispensation: Relaxation of 10% marks is given in respect of students who are wards of SC, ST, OBC & Physically Handicapped employees in the grant of Scholarships, Book Awards. In case of girl students, 15% relaxation is being given for grant of scholarship/book awards.

5). Every year Bharat Sanchar Seva Padaks are given to those BSNL employees who have shown exemplary/meritorious performance. This award is given to six categories of employees (Executive-2 & Non Executive-4). Similarly, the best Customer Service Centre and the Best Maintained Telephone System awards are given to concerned Customer Service Centers/SSA respectively.

6). Swachhtapakwarawas organized at the level of pan India BSNL during 16 Nov to 30 Nov. 2020

7). Covid 19 guidelines have been followed properly in pan India BSNL offices.

Some of the Sports activities/ schemes are given below: -

1). BSNL is encouraging its employees to participate in various sports activities by annually organizing 15 games and one cultural competition. Due to financial crunch, All India BSNL Sports Tournaments and Cultural Meet 2020-21 could not be organized. But the meritorious sports person is allowed to participate in national level tournament for year 2020-21 also.

2). Sanchar Krida Award/Cash Awards are given to sportsmen who excel at National and International level.

Staff Strength

Total number of employees as on 01.12.2020:

Group	Number of employees	Employees-Scheduled		OBC	Ex-Servicemen	Differently abled Persons	Women Employees
		Scheduled Caste	Scheduled Tribe				
Executive	30,307	5,461	1,961	6,875	113	648	4,654
Non-Executive	34,989	5,534	1,740	3,720	51	**284**	7,602
Total	**65,296**	**10,995**	**3,701**	**10,595**	**164**	**932**	**12,256**
Number of Disabled employees as on 31st Dec. 2020 is 932.							

Shri P.K Purwar, CMD BSNL and Shri Dinesh Khara, MD SBI, formally launched Bharat Insta Pay service on 12th March 2020.

5.2 MAHANAGAR TELEPHONE NIGAM LIMITED(MTNL)

Mahanagar Telephone Nigam Limited (MTNL) was incorporated on Feb.28, 1986 under the Companies Act as a wholly owned Govt. Company and on April, 01 1986, assumed responsibility for the control, management, operation of the telecommunications services in the two Metropolitan Cities of Delhi and Mumbai. The jurisdiction of the Company comprises the city of Delhi and the areas falling under the Mumbai Municipal Corporation, New Mumbai Corporation and Thane Municipal Corporation for providing fixed line and WLL based limited mobility services. However, for Cellular services the company has the license to provide services in Delhi including NCR (towns of Ghaziabad, Faridabad, Noida and Gurgaon) and in Mumbai including Navi Mumbai, Kalyan & Dombivili. MTNL is a complete telecom solution provider, providing the following wide range of services to its esteemed customers:

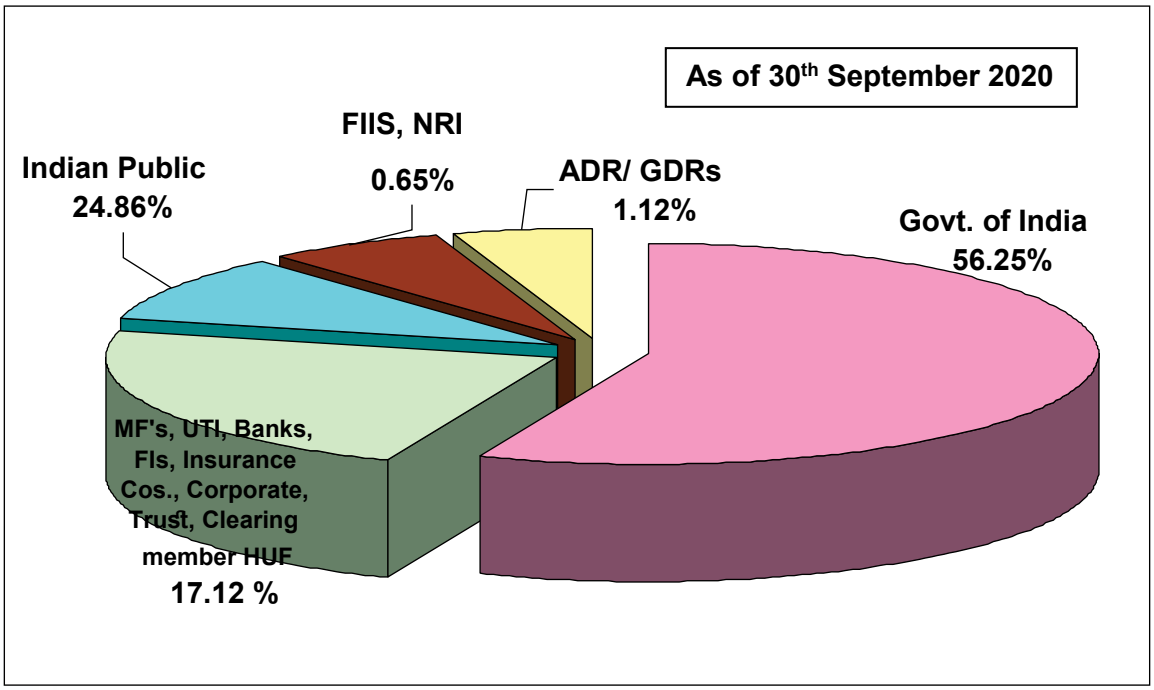
- Basic Telephone Service
- Cellular Mobile Service (both 2G / 3G GSM)
- FTTH
- ISDN
- Broadband
- Leased Circuits

- IN Services
- Wi-Fi hot spots
- Data Center Services

In addition, MTNL is providing a host of value added services to its wire line & wireless customers. VAS is normally a third party item & is provided on franchise model on revenue share basis as & when available.

The authorized capital of the Company is ₹10,000 crore. The paid up share capital is ₹630 crore divided into 63 crore shares of ₹10 each. At present, 56.25% equity shares are held by President of India & his nominees and remaining 43.75% shares are held by FIIs, financial institutions, banks, mutual funds and others including individual investors.

5.2.1 Share Holding Pattern



5.2.2 Physical Performance

During the year 2020-21 (upto Oct 2020), there is total addition of 19,703 connections (including Fixed line, GSM & Broadband). During this period as sufficient spare capacity was available for all type of services & severe financial constraints of the company, no addition in the Networks installed Capacity was made.

Details of achievements of MTNL Delhi & Mumbai during 2020-2021 (upto October 2020) are as follows:

5.2.3 Achievements

S. No.	Items	Achievements 2020-21 (upto Oct'20)	
		Delhi	Mumbai
1	DELs (includes Landline, GSM & Broadband) Gross	10,284	5,907
2	FTTH (Gross)	3174	338
4	Optical fiber Cable(in Route Kms)	41.209	20.993
5	Optical fiber Cable(in Fiber Kms)	1549.290	711.336

It is worth mentioning here that, MTNL is operating only in Delhi and Mumbai which are the most fiercely competitive markets characterized by high saturation and having more than 150% tele-density. However, to overcome these limitations, MTNL has modernized its network by incorporating state of art technologies and adopting customer friendly approach. The company has been constantly seeking ways and means to provide the Telecom Services of International standard. Status as on 31st Oct, 2020 of total Network Capacity & subscriber base in respect of Fixed line, GSM, & Broad band services are summarized below-

Sl. No.	Services	Network Capacity	Subscriber base
1	**Fixed Line**	50,02,897	30,06,059
2	**GSM**	56,00,000	33,30,091
3	**Broadband**	16,34,644	7,31,848
4	**FTTH (in no. of ports)***	2,368	36,519

**each port can provide 32 No. of connections*

As can be seen from above, enough network capacity is available & all the services which are being provided by MTNL to its' customers are available on demand and there is no waiting list for any of the services.

5.2.4 Financial Performance

The Financial performance of MTNL is tabulated as under:

(Figures in ₹crore)

Items	2017-18	2018-19	2019-20	2020-21 (upto Sep'20)
Income from Services	2371.91	1987.80	1536.36	673.33
Other Income	744.51	618.91	690.66	218.33
Total Income	3116.42	2606.71	2227.02	891.66
Expenditure	6085.87	5996.91	5922.70	2111.47
PBT	-2973.45	-3390.20	-3695.68	-1219.81
Net profit	-2970.65	-3397.59	-3695.68	-1219.81

Despite stiff competition, from other operators, MTNL has achieved a financial turnover of ₹891.66 crores with a loss of ₹1219.81 crores during the year 2020-21 (upto SEP'20).

5.2.5 Different Services and projects

MTNL has planned several initiatives/ projects to improve its network capabilities and provide better quality of service to its customers. Some of the salient initiatives and projects are as below.

5.2.5.1 Mobile Network:

Government of India in the cabinet meeting held on 23-10-2019 has approved the proposal of DoT for Revival of BSNL and MTNL by reducing employee costs through VRS, administrative allotment of spectrum for 4G services, debt restructuring by raising of sovereign guarantee bonds, monetisation of assets and in-principle approval of merger of BSNL and MTNL.

- MTNL undertook the task of improving the Wireless Network in Delhi and Mumbai so as to improve the coverage &downlink speed to 21.1 Mbps & uplink speed to 5.76 Mbps which was earlier 3.6 Mbps & 384 Kbps respectively with following major projects:

- **3G expansion & upgradation in Delhi:**

  Expansion of GSM/ 3G RF network by adding 1080 nos. of 3G sites & 800 nos. of hybrid microwave to meet the backhaul capacity and Data handling capacity to 10 Gbps. In addition, upgradation/replacement of 720 old Node-B and upgradation of 914 old 8Mbps-Microwave Hops to hybrid M/W of 400 Mbps capacity.

- **3G upgradation in Mumbai:**

  Upgradation of 720 old Node-Bs and upgradation/replacement of 497 old 8Mbps-Microwave Hops to hybrid M/W of 400 Mbps capacity. 3G upgrade implementation of HSPA+ enhanced data speed from 3.6 Mbps to 21 Mbps and 384Kbps to 5.76Mbps on downlink and uplink.

- **Convergence of Core Network of Delhi and Mumbai:** MTNL took initiative to have common core of 3G network for Delhi and Mumbai. Core network of Delhi and Mumbai has been converged by migrating the core elements of Mumbai Network to Delhi. This resulted into saving of opex of ₹96 crore and will help in reducing Opex on annual basis in terms of AMC cost and staff Cost. The convergence lead to significant improvement in resource utilisation and reliability of network. With this convergence Mumbai network is also able to utilise the benefits of upgraded core network of Delhi.

5.2.5.2 Wireline Network:

- **Upgradation of the MPLS Network:** MTNL is planning to upgrade the entire MPLS network and make it future ready to handle the growing traffic needs of FTTH and 4G network.

- **FTTH Revenue Share Policy:** MTNL had worked out, finalized and made operational the policy to engage partners on revenue share basis to extend its FTTx services. Various partners

were roped in to offer the high speed broadband services on fiber.

- **Redeployment of DSLAMs:** Redeployment of DSLAMs of existing Broadband Network near to the subscriber premises in Delhi and Mumbai thereby reducing copper length and enhancing the quality of broadband service. A total of 242 DSLAMs have been redeployed in Delhi and 203 in Mumbai till 31st March 2020 thereby reducing copper length and enhancing the quality of Broadband service. This has improved customer experience and reduced the number of complaints.
- **Refurbishing of Pillars and DPs:** To improve the QoS parameters, refurbishing of Pillars and DPs has been planned in phased manner.
- **Replacement of Drop Wire:** To improve copper pair quality, existing Drop wires have been replaced with twisted drop wires or thermo sleeves have been put at open joints at DPs by MTNL.
- **Upgradation of Broadband Speed:** To give boost to customer experience, Download Speed of Broadband subscribers has been upgraded to 8 Mbps without any additional cost depending upon feasibility and line parameters.

5.2.6 Utilization of MTNL Assets

MTNL has been making conscious efforts to maximize revenue by effective utilization of its spare assets. Besides other initiatives, MTNL, during the year 2019-20, has rented out 1.65 lakhs sq. ft. of spare built up spaces in its buildings at Delhi & Mumbai. Now on consolidation basis 13.63 lakhs sq. ft. has been rented out so far by MTNL to various government controlled entities.

The financialof MTNL reveals a revenue of ₹182 crore (upto Sep 2020 of F.Y.2020-21) from rental income of its various spare Infra Assets and expecting a total revenue of more than 360 crore for entire financial year 2020-21.

MTNL has received the approval of the President for monetization of various land parcels in Delhi and Mumbai through the Department of Investment and Public Asset Management (DIPAM). In total approval been received for 59 properties along with 494staff quarters of MTNL in Delhi &Mumbai.

5.2.7 Joint Ventures and Subsidiary Companies

5.2.7.1 Mahanagar Telephone (Mauritius) Ltd.(MTML)

MTML is a 100% owned subsidiary of MTNL in Mauritius. The company is having license for Mobile Services, International Long Distance (ILD) Services and Internet Services. In a small Island country, having a population of around 12.5 Lacs only and having Mobile Tele-density of more than 150%, MTML has been able to successfully position itself with Customer Centric Services. With patronage of more than 3,00,000 customers, MTML is able to compete well in a saturated telecom market. The company continues to be in profit for 11th Consecutive Year.

MTML is offering Mobile Services on latest state of the art technology having 2G/3G Network all over the Island and 4G (LTE) Services covering more than 90% of the total population. With increased coverage of highspeed data services on 4G and migrating more and more subscribers to its 4G network, MTML customers are now generating more than 1100 TB of data every month. Data download has multiplied by more than 50% during the financial year 2020-21.

MTML has earned Gross Revenue of approximately ₹550.5 Million during the period of Apr 2020 to Nov 2020 as against ₹538 Million during corresponding period of last fiscal year.

The company has improved its revenue marginally despite severe challenges faced during this period. Due to Covid-19, Mauritius was placed under curfew/lockdown leading to almost negligible business activity. Being an Island, 1/3rd economy of Mauritius used to run on Tourism Sector and Roaming used to be a big source of revenue for the company in past years. However, due to Covid-19, Tourism Sector was almost closed due to which Roaming Revenue declined by almost 85%. Other International Services like ILD, A2P SMS also suffered severely due to lack of economic activity. Total revenue of the company during the last financial year was ₹884 Million whereas Gross Revenue of ₹893 Million is expected during the Current Financial year.

MTML has established its own brand CHILI in the Republic of Mauritius as trusted total telecom service provider. With more than 260 BTSs operating across the island, the quality of service is to the satisfaction of customers. Collocation with other telecom providers for mobile network has also started opening a new source of revenue for the company. MTML has been introducing innovative tariff packages to match current market dynamics with the state of art technology and is quite popular especially among youth.

The company has started focusing more on Enterprize Services and is making inroads in this challenging market, especially because MTML doesn't have Fixed Line Services and Optical Fibre Network. To overcome this challenge and to meet the requirements of high data growth, MTML has been exploring the possibility of having fibre connectivity for its Mobile Towers. MTML has been able to successfully engage Central Electricity Board (CEB) of Mauritius, A Government Organization, to provide Optical Fibre to MTML hub sites free of cost in lieu of MTML Mobile Services for its employees, initially for 6 months and further extendable to one year. Under this arrangement, MTML has connected OFC to various hub sites and improved customer experience. MTML Mobile connections will also be deployed in Smart Meter Network on trial basis, which is being developed by CEB. The arrangement will strengthen MTML's Backhaul Network for its 4G Network and to provide Carrier Grade Services for Enterprise Customers as well as create further business opportunity in Smart Meter Network.

All the expenses of the company are paid from its own internal resources. The CAPEX for procurement of equipment is totally met from its own internal resources. MTML is operating from its own building, constructed from internal resources, situated in Cyber City, Mauritius which is considered to be the heart of IT hub in Mauritius. There is no debt liability on the Company.

The company is managed by CEO, CFO and 9 more officers, all on deputation from the parent company. Other operations are managed through local outsourcing.

5.2.7.2 Millennium Telecom Ltd. (MTL)

Millennium Telecom Ltd (MTL) is a wholly owned subsidiary of MTNL.

Services being offered by MTL include Telecom consultancy & engineering, Project Management, Wi-Fi solution, project on e-governance, Managed services, Turnkey ICT solution, GIS based services, capacity building and skill development etc.

Millennium Telecom Ltd (MTL) is also moving ahead with a very high growth rate. During the year under report i.e. 2019-20 the company has earned a revenue of ₹1.47 crore.MTL earned a net profit of ₹25.67 lakh for the period ending 31st March 2020. MTL is in the process of winning over more orders in the upcoming years.

A large number of Govt. Institutions have awarded works on nomination basis, which have been successfully executed by MTL. Customer list include Air India, J & K Government, Central University-(Mahendragarh) Haryana, UP Building and Other Constructions Workers Welfare Board (BOCWWB), Lucknow, Thane Municipal Corporation, CIDCO, Film Division of India, Insurance Institute of India etc. MTL is also expanding its portfolio of service for providing generalized as well customized solutions to suit government and semi government institutions. MTL has around 25 empanelled BDAs.

In 2019-20, MTL has worked on various projects i.e. Onsite Facility Management Services for 24x7 Support for the Network Operation & Maintenance of campus Wide Wireless & Wired Local Area Network Solution in the Central University of Haryana, Pali –Mahendergarh, providing and maintaining point to point RF link to Air India, GIS based Survey of District Meerut and Ghaziabad of UP for generating social welfare fund for labour's CESS, CIDCO EPABX Server (3 years contract), TMC WAN Networking (5 years contract), TMC Managed services (5 years contract) etc.

5.2.7.3 MTNL STPI IT Services Ltd. (MSITSL)

MTNL STPI IT Services Ltd. (MSITSL) is a 50:50 Joint Venture company of Mahanagar Telephone Nigam Limited (MTNL) and Software Technology Parks of India (STPI). MSITSL was incorporated on 31/03/2006 under the Companies Act, 1956, with authorized Capital of ₹50 crore.

MSITSL has established the physical infrastructure of state of the art Tier III Data Center at Chennai on space taken on lease basis from STPI. The Data Center has server farm area of around 3500 sq. ft. and the total investment made for setting it up was ₹477 lakh. This Tier III Data Center is maintaining 99.98% uptime on 24X7.

The commercial operation of the Data Center commenced in 2009. At present, the following customers have co-located server racks for their projects and operation in the MSITSL Data Centre.

- The Ministry of External Affairs (MEA) has hosted Passport Seva Project at MSITSL Data Center through M/s TCS.
- The Directorate General of Employment & Training (DGE&T) in Ministry of Labour& Employment has hosted National Career Project through STPI at MSITSL Data Centre.
- M/s Repco Bank Ltd has co-located server racks for banking operation.

The details of revenue earned by the Company in previous years are as follows:

Financial Year period	Revenue in ₹ (Lakhs)	Financial Yearperiod	Revenue in ₹ (Lakhs)
2009-10	196	**2015-16**	534
2010-11	275	**2016-17**	540
2011-12	297	**2017-18**	579
2012-13	360	**2018-19**	573
2013-14	388	**2019-2020**	614
2014-15	422	**2020-21 (up-toDec20)**	441

MSITSL is in the process of selecting suitable consultant for expanding the Data Center server farm area by around 1200 sqft as per Tier-III standard. MSITS would accommodate around 30 Nos of racks at total rated power capacity of 150 KVA in expanded server form area

5.2.7.4 United Telecom Ltd. (UTL)

A joint venture of TCL, TCIL, NVPL (Nepal) & MTNL set up in Oct, 2001 with MTNL stake of 26.68%. The company provides Mobile/ILD/data services in Nepal. Company is making losses and has a total customer base of approx. 5,95,731 as on 31stMarch, 2019.

UTL obtained Unified License from Nepal Telecommunications Authority (NTA), regulatory body of telecommunication market in Nepal, on September 5, 2016. This is a Pan-Nepal license to operate any service- GSM, CDMA, ISP, NSP inside the territory of Nepal. Under implementation of the Unified License, UTL is in the process of rolling-out GSM network all over Nepal in different phases in addition to its existing network of almost 200 BTSs covering 44 out of 75 districts of Nepal in order to compete in the market with an aim to penetrate the market from Day 1. UTL has been negotiating with vendors for supply and service of GSM systems, infrastructures, Billing, IN/VAS systems to start the services at the earliest.

5.2.8 Human Resource:

- **Manpower**: The total employee strength of MTNL, including various employee categories, as on 30.09.2020 is 3899. Employees belonging to Scheduled Castes are 909, which constitute 23.31% of the total employees. The total number of employees belonging to Scheduled Tribes is 123 which is 3.15% of total employees.

Manpower details:

Group	Total working strength	SC	ST	Women	Persons with Disabilities
A	197	52	24	20	0
B	995	199	42	200	18
C	1610	314	27	334	03
D	1079	344	30	243	02
TSM	2	---	---	---	---
Total	**3899**	**909**	**123**	**797**	**23**

MTNL has endeavored to fulfill the statutory requirements with regards to implementation of reservation policy for candidates belonging to SC/ST/OBC communities as well as physically challenged candidates.

- **Training:**

  At present MTNL has two state of the art training centers one located in New Delhi and other at Mumbai: -

  (i) The Institute of Telecom, Technology & Management (ITTM) Shadipur N. DELHI

  (ii) Centre for Excellence in Telecom, Technology & Management (CETTM), MUMBAI

The Institute of Telecom Technology and Management, ITTM, Shadipur, New Delhi is a state of the art training centre of MTNL, Delhi engaged in imparting induction training and short duration training to its officers and employees in the field of Telecom, IT, Computer System and Management.

ITTM has the necessary infrastructure, technical and academic competence and excellence for providing training in specialized courses in the field of GSM, Broadband Technology, Switching, Transmission, External Plant, IT, Computer System, Management and various wellness and Life Style Management subjects comprising of Motivation, Positive Thinking, Stress Management and Spirituality at workplace and other healthcare programs.

In addition to this, ITTM also conducts Industrial Training and Visits for students from Engineering Colleges and Various Schools of India. From April' 2020 to November' 2020, total 194 Internal Trainees were trained at ITTM and CETTM.

5.3 REVIVAL OF BSNL AND MTNL

The long pending matter of revival of BSNL and MTNL was approved by the Cabinet. The comprehensive revival plan consists of several measures including reduction of staff cost through Voluntary Retirement Scheme (VRS), allotment of spectrum for 4G services, monetization of land/ building, tower and fiber assets of BSNL/MTNL, debt restructuring through sovereign guarantee bonds and in-principle approval of merger of BSNL and MTNL.

- The Voluntary Retirement Scheme (VRS) was implemented successfully. Total 92,956 employees of both PSUs (BSNL – 78569 and MTNL – 14387) who opted for VRS have retired on 31.01.2020. The salary expenditure in BSNL and MTNL has reduced by around 50% (approx. Rs. 600 crores per month) and 75% (approx. Rs 140 crores per month) respectively. EBIDTA (Earnings Before Interests, Taxes, Depreciation and Amortisation) have become positive in first half of FY 2020-21 in both BSNL and MTNL.

- The process for spectrum allocation for 4G services to BSNL on pan-India basis including Delhi and Mumbai has been initiated and funds have been provisioned in FY 2020-21.

- Sovereign guarantee of Rs 15,000 crores have been extended to BSNL/MTNL. BSNL and MTNL have raised the funds from the market to restructure existing high cost debt.

5.4 ITI LIMITED (ITI)

ITI Limited was established in 1948 as first PSU of Independent India for addressing strategic and secured telecommunication needs of the country. The company was set up at Bangalore (Karnataka) and was incorporated on 25-01-1950 under the then Mysore Companies Act, 1938 and later converted as the First PSU. The Government of India holds majority equity stake in the Company. ITI has its Registered & Corporate Office located at Dooravaninagar, Bangalore-560016.

With the Government of India's plans to meet strategic needs in the growing demand of expanding telecommunication network and to develop backward areas by providing employment to local populace, ITI over a period of time, widened its manufacturing bases in the states of Jammu & Kashmir (one unit at Srinagar), Uttar Pradesh (three units at Naini, Rae Bareli and Mankapur) and Kerala (one unit at Palakkad). ITI has provided livelihood to thousands of employees, directly and indirectly, all over the country. All the manufacturing Plants are accredited with ISO 9001-2015 and ISO 14001-2015 standards.

5.4.1 Revival Projects

As on 30th November 2020, ITI has received ₹769 crore out of ₹2264 crore from the government towards capex for Revival Projects. These funds have been utilized for upgrading the manufacturing infrastructure of ITI to cater to the need of emerging technologies in Telecom industry after study of existing market and expected demand for Telecom products.

With the upgraded manufacturing infrastructure, ITI has successfully implemented products like Defence encryption products, HDPE pipe manufacturing, GPON, Optical Fiber Cable manufacturing, Data Centre, PCB plant up-gradation, SMPS, MLLN, Smart cards, Component screening, EMI/EMC & Safety test labs, Solar panel manufacturing, 3D Printing, Micro PC manufacturing, Smart Energy Meter manufacturing, Antenna manufacturing, CLIP manufacturing, Wi-Fi Access Point and Radio Modem manufacturing etc.

5.4.2 Highlights of Performance During 2020-21

5.4.2.1 Financial Performance

ITI has achieved a Turnover of ₹680 crore till 30.09.2020 in FY 2020-21. ITI had posted a turnover of ₹2403 crore & profit of ₹151 crore (with other comprehensive income and without considering any Government grants) in FY 2019-20.

5.4.2.2 Order book position & Major Orders received FY 2020-21

The order book position of ITI (Balance orders) is about ₹11153.69 crore as on 1.11.2020 In addition to this ITI has an Advance Purchase Order worth ₹7095.35 crore.

ITI has signed a contract for ₹7796 crore with Ministry of Defence (MoD) for implementing Army Static Switched Communication Network (ASCON) Phase IV project to deploy and maintain Phase IV of the Army's modern communication network for the defence forces across India. The project includes civil works for the infrastructure and optical fibre network, installation, commissioning and maintenance of equipment such as IP MPLS routers, Microwave Radio, Satellite terminals, NMS and

testing tools.

ITI has also received Order worth ₹65.91 crore against Rollout of Airtel FTTH connection in Eight Circles including FF-OFC laying, Trenching & digging work for NLD back Bone.

Further, ITI has received order worth ₹37.27 crore from BBNL for implementation of BharatNet Phase-II project including supply, installation, testing and commissioning of OFC (underground & Aerial), GPoN Network and Radio Network as well as O&M (operation & maintenance) across the Union Territories of Andaman & Nicobar.

The Company has planned a turnover of ₹2845 crore for FY 2020-21.

5.4.2.3 BharatNet Phase II project

a) **Gujarat Net Project:** ITI is executing a turnkey project for provisioning of broadband solution across Gujarat State. The project consists of laying of approx. 16000 KM of OFC and establishment of network comprising DWDM network, L3 switches, Fibre monitoring system, Data Centre and network operating Centre (NOC). The Project value is approx. ₹1417 crore. As on 10-11-2020 Trenching and Ducting work of 14900 Km has been completed. Optical Fiber Cable laying work of about 15626 KM has been completed. ITI has supplied in house manufactured 223 OLT & 4233 ONTs to GFGNL (GujNet) as on date. As on 11-11-2020 Internet Broadband connectivity to 3280 Gram Panchayats has been established.

b) **MahaNet Project:** ITI is executing a turnkey project for provisioning of broadband connectivity across Maharashtra State. This project is for laying of OFC (23300 KM underground, 14400 KM Arial cable) and establishment of network comprising of IP MPLS Routers, Switches, Solar equipment, microwave radio, Wi-Fi hotspots & network operating centre (NOC). The Total Project value is around ₹3111.67 crore. As of now OFC laying (UG and OH) work of around 9075 Km lengths and Router installation for around 4091 Nos. of Gram Panchayats have been completed. ITI has executed the project with total value of ₹1441 crore. Out of this, turnover of ₹396.62 crore is achieved till 30th Nov. 2020 in FY 2020-21 from this project.

c) **TPA (Third Party Audit) in Jharkhand and Odisha**

Under BharatNet Phase-II, BBNL (Bharat Broadband Network Ltd.) has assigned the Project for 11 Districts (118 Blocks/ 1684 GPs) of Jharkhand to JCNL (Jharkhand Communication Network Ltd.). ITI is working as Third Party Auditor (TPA) –Tier I in this project valued at ₹5.76 crore. ITI is also working as TPA-Tier I for Work Order valued at ₹12.30 crore for 30 districts (264 Blocks/2983GPs) of Odisha received from OPTCL (Odisha Power Transmission Corporation Limited). Cumulative Revenue of ₹9.75 crore has been generated through these projects for FY 2019-20 and ₹7.36 crore has been achieved for FY 2020-21.

d) **TPA (Third Party Audit) for Satellite based Broadband equipment and Solar Power Plant**

ITI has also received an order from BBNL worth ₹11.64 crore for TPA activities for Acceptance and testing of Satellite based Broadband equipment and Solar Power Plant at 4849 GP sites across 15 States/Union Territories.

5.4.2.4 Production of OFC & HDPE Pipes

Anticipating increased demand of OFC and corresponding HDPE ducts in the country, ITI has established OFC plant at Rae Bareli with a capacity of 30,000 km per annum (24F). Nine lines of HDPE duct with a total manufacturing capacity of 32,500 KM per annum, out of which seven lines have been established at Rae Bareli unit and two lines at Palakkad plant. ITI has established infrastructure for manufacture of OFC (24 F to 96 F) including ribbon type cable. Both HDPE duct and OFC has got the required TSEC approval. ITI is executing order for manufacturing and the supply of 10,000 KM HDPE pipe for MahaNet project. ITI has already supplied 7100 KM and balance is under progress. ITI has received order for supply of OFC cable to MTNL. ITI is also planning to supply HDPE and OFC for ASCON Phase IV projects.

5.4.2.5 Solar panel manufacturing

ITI has established 18 MW solar panel manufacturing facility at Naini unit. Significant activities related with solar project are as below:

a) **SPV Panel for Maha IT project**: ITI Naini has received the PO of Value ₹6.82 crore for supply of 20000 nos. of 60 watts SPV Panel. Naini Unit has produced 12000 nos. of SPV panel up to March 2020. Manufacturing of SPV module was affected due to Covid-19 Lockdown. In the current financial year (FY 2020-21), manufacturing of remaining 8000 nos. of SPV panel in mid Sep-2020 (value approx. ₹2.69 crore) was completed.

b) ITI make SPV modules (ranging from 40Wp to 325Wp) was registered with Bureau of Indian Standard (BIS) New Delhi. The tests were conducted as per the standards, namely IS 14286: 2010/ IEC 61215: 2005 (Crystalline Silicon Terrestrial Photovoltaic (PV) Modules-Design Qualification and Type Approval), IS/IEC 61730: 2004 (Photovoltaic (PV) Module Safety Qualification Part 1 Requirement for Construction) & IS/IEC 61730: 2004 (Photovoltaic (PV) Module Safety Qualification Part 2 Requirement for Testing).

c) ITI Naini unit plans to manufacture SPV module of 325Wp for the power plant project at ITI Rae Bareli unit, ITI Naini unit & ITI RO office, Lucknow to the capacity of 1.5MW, 300KW & 100KW respectively. Another 1000nos of 325Wp SPV modules plans to be manufactured for retail sale.

5.4.2.6 Telecom testing labs.

As per MTCTE (Mandatory Testing and Certification of Telecom Equipment) guidelines, ITI is establishing 4 testing labs like EMI/EMC, Safety, SAR and Security Labs for testing various parameters at ITI Bangalore plant in collaboration with TEC. Two labs EMI/EMC & Safety Lab are functioning at Bengaluru Plant and currently being used by various MSMEs, Government labs and internal R&D. Other two labs namely Telecom Security Test Lab & SAR Lab are expected to be commissioned subject to availability of funds.

5.4.2.7 Start-up hub (VINYAS)

In ITI Bangalore plant, a 125-seater Start-up hub, having amenities like dedicated corporate hub meeting room, demo room, highly secure Wi-Fi connectivity, is functional. Start-up hub customers can utilize ITI manufacturing facilities like PCB, SMT, Fabrication, Telecom testing labs and 3D printing to enhance their operations from this facility. Currently 9 Start-ups in Technology domains like Consumer Electronics, Aeronautics, Medical Electronics, Additive Manufacturing and IOT are working utilising Start-up hub infrastructure.

5.4.2.8 Expansion of Data Centre

ITI has been operating Tier-3 complied (with uptime 99.982%) Data Centre of 350 racks capacity in its Bangalore plant since 2009 where the services like Aadhaar authentication, E-banking and ERP services are provided. Various Data Centre services like Colocation (co-hosting), Managed services, e-mailing services are provided to PSU, Banking, Corporate and private as well as Start-up customers. Company is establishing another 1000 racks capacity in the same campus. In Phase-1 non-IT work for 343 Racks Space, of the Data Centre is completed and is ready for Hosting Customer services like Cloud enabled service, manged service, Colocation services etc. Also, Marketing efforts are underway and the rack spaces are expected to be filled-up within 4 months. Phase-2 of Datacentre with 657 Racks has been started and is planned to be completed by January 2021.

5.4.2.9 Face Shield Manufacturing

To combat the effect of Covid-19, ITI has developed Face shield in its various units. It is comfortable, light weight made of replaceable PET sheets with 100% visibility. The company is now capable of producing 5,00,000 face shields monthly which may be extended to 15,00,000 face shields per month in the coming day. ITI has received orders worth ₹6.45 crorefor supply of 16.71 lakhs nos. of Face Shields and the supplies are under progress.

5.4.2.10 Smart Energy meter

ITI Palakkad unit is manufacturing Smart energy meters for supply to EESL (Energy Efficiency Services Ltd.) for their Advance Metering Infrastructure (AMI) requirements. The units have received type approval and BIS certification for Single Phase Smart Energy meters. Palakkad Unit has manufactured and supplied Smart energy meters to various DISCOMs in UP and Haryana. Type approval received for Three Phase Meter recently with the samples submitted from Palakkad Plant.

5.4.2.11 Smart Banking Card Project – Rupay / MasterCard certification

ITI Palakkad unit has developed infrastructure in line with technical specifications for Payment Card Industry (PCI) for smart card manufacturing. The infrastructure includes modern manufacturing equipment for Assembly (milling & embedding) and personalization.

ITI Palakkad got accreditation for Rupay chip card (Contact & Contactless) personalization from NPCI. With this, ITI can address the requirements of new Government initiative of National Common Mobility Cards (NCMC). ITI has received pilot order from SBI for supply of 2 Lakhs cards worth ₹0.50 crore.

5.4.2.12 Manufacturing of Wi-Fi Access Point

ITI has entered into Technology Collaboration agreement (TCA) with M/s Z-COM for manufacturing of Wi-Fi Access point equipment at Bangalore and Mankapur plants under phased manufacturing programme. ITI will manufacture and supply PPP-MII compliant Wi-Fi access points. Procurement of Capex equipment for CKD manufacturing is being taken up. Based on demands, it will also be set up at Mankapur unit. ITI is in the process of execution of an order for manufacturing and supply of 25,000 Access points. ITI is also planning to manufacture Wireless access point(WAP) equipment with ToT from C-DOT technology. Proof of concept(POC) for this equipment is in progress at ITI Bangalore plant in co-ordination with C-DOT.

5.4.2.13 Contract manufacturing

ITI plants have established new State of the Art PCB Manufacturing facility, SMT Assembly line, Flying Probe Tester for Bare PCB & Assembled PCB, Injection Moulding facilities, Sheet Metal Fabrication, and 3D printing facilities to cater to the needs of various divisions within ITI as well as for Customers like M/s BEL, M/s ISRO, M/s ADA and other private customers.

In addition to the above, ITI carries out Business for Govt. agencies like CDAC for their various IoT Products right from Components procurement to Complete Assembly and testing.

5.4.2.14 Micro PC production

ITI Palakkad has started assembly and marketing of Micro PC branded "SMAASH", which is having unique features such as very small size, no moving parts, low power consumption, sleek design with built-in features Wi-Fi, Bluetooth, and ultra HD 4K graphics, dual display and operating in a silent environment. The product is now registered in GeM portal as "Micro PC".

We have already supplied approximately 5000 nos. of SMAASH PCs to various customers such as E-health Kerala, AIR India, Various Universities, Govt. and Pvt. Institutions etc. ITI is also providing Green Computing solution with Smart Power Station and Solar panel. ITI is associating with Intel for Laptop and Servers are the new initiative. SMAASH Connect Video Conferencing Solution Using the SMAASH PC with VC Engine from M/s Techgentsia is another venture.

5.4.2.15 Assembly & Testing of various flight packages for VSSC

ITI Palakkad plant has an exclusive Space Electronic Fabrication Centre to manufacture Space and Military grade assemblies. The facility is accredited by VSSC, for all the activities connected with realization of electronic assemblies in launch vehicles (PSLV, GSLV and GSLV Mark III). As on today, 70 Types of assemblies are already approved for production at ITI Palakkad, against which purchase orders are received and supplies in progress. This includes 3 types of RF assemblies also, for which ITI Palakkad is the first industry partner to VSSC accredited for Assembly & Testing of RF packages of launch vehicles. Developmental works for more assemblies are in progress.

ITI Palakkad has been awarded with a rate contract in GOCO (Government Owned Company operated) mode of business with Thumba Equatorial Launching Station (TERLS), VSSC for assembly

& Testing of Remote Mount Safe Arm Assembly (RMSA), which is a critical electronic part in all launch vehicles. This is the first work in GOCO mode by VSSC and ITI Limited, Palakkad has become the first industry partner of VSSC in GOCO mode.

More than 1500 assemblies done by ITI Palakkad are used in various launch vehicles, including the GSLV Mark III used in historic Chandrayan-2 mission of ISRO.

5.4.2.16 Component Screening Lab

An exclusive facility for Screening and Burn-in of electronic components used in launch vehicles has been set up at Palakkad plant. At present this facility is accredited by VSSC, Trivandrum for screening of 22 types of Active and Passive electronic components, 47 types of sub-assemblies and 2 types of stacks. More than 50,000 electronic components and around 175 flight grade assemblies are subjected to screening tests successfully and delivered to VSSC utilizing component screening lab facilities.

5.4.2.17 R&D activities for development of new products

In Financial year 2020-21 R&D has successfully developed products and solutions like crypto products, SOAR (Ventilator) for defence, Multi Post EVM, Power supply modules, Algorithms for various crypto products. R&D has carried out the customization of Encryptors & SOAR for different customers. R&D has initiated development of new products like Smart Energy Meter, Secrecy Devices, etc.

Research & Development (R&D) located in Bangalore plant is designing & developing Communication Equipment to support manufacturing and keep abreast of State of the Art Technologies in the field of Electronics & Communications. R&D has core strength in design & development of Encryption systems to secure Communication Networks and also in development of Network solutions. The necessary infrastructure to aid design & development is available in the form of Test Instruments, Software design tools, CAD design tools, reliability lab, EMI/EMC test lab and Telecom testing lab.

5.4.2.18 AMC services for Managed Leased Line Network (MLLN)

ITI has been the leader in supplying MLLN equipment for BSNL and MTNL since 2002-03. The existing MLLN networks of these Telecom Service Providers have been set up and maintained by ITI till date. ITI is providing 24*7 technical support and offering Repair and maintenances services as part of AMC.

5.4.2.19 ASCON Phase-IV

ITI has signed a ₹7,796 crore contract for phase IV of the Army Static Switched Communication Networks (ASCON) project. The project covers an IP MPLS- based communication network with microwave radio, satellite and optical fibre network as media. The project includes installation, commissioning and maintenance of telecom equipment like IP/MPLS Routers, Satellite systems, Microwave Radio, NMS, mobile nodes, test equipment and civil works for providing the complete infrastructure at various sites and rollout of Optical Fibre network of about 11,000Km. The scope of the project also includes a warranty period of two years and maintenance support of the network

for another eight years after the warranty. Utilization of local resources and hiring of manpower would generate employment opportunities especially for people in remote border areas, support and boost rural economy, and provide skill development during the prolonged period of execution and maintenance of the network.

5.4.2.20 AMC for ASCON (Phase-I, II & III)

ITI through its Network System Unit provides Annual Maintenance Contract services to all phases (Phase-I, II, & III) of Army Static Switched Network (ASCON) of Defence. ASCON Network is secured using Bulk Encryption. It uses state-of-the art ATM (Asynchronous Transfer Mode) and ISDN (Integrated Services Digital Network) switches, Satellite media, PAMA (Permanently Assigned Multiple Access) and DAMA (Demand Assigned Multiple Access), Microwave Radio, PDH, SDH and Optical Fiber communication (OFC) Network PAN India. ITI maintain OFC route of Army defence network for a total length of 5000Km. ASCON AMC service is likely to be maintained by ITI for next one more year (i.e.) up to Nov. 2021. In addition to Phases I, II & III, AMC service is being provided for 12 + 1 (OFC Routes) Up-gradation Project also (valid till 24.02.2021).

5.4.2.21 Future Prospects

To supplement country's requirement of self-reliance in the area of Telecommunication, recently ITI has entered into an MoU with various technology partners.

- ITI has entered into an MoU with Tech Mahindra for collaboration 4G & 5G smart networks, Smart Cities and Health Care services.
- MoU with TCS is done for Business opportunities with GOI PSU's, BSNL, and MTNL and for collaboration into Smart cities, Medical electronics, health care, IOT device manufacturing etc.
- In Cyber Security domain ITI has entered into an MoU with ILANTUS for business opportunity in Identity and Access Management system (IAM). Under this MoU, ITI and Ilantus will address the challenges of today's fragmented identity landscape through Identity and Access Management Solution. Business proposals for IAM solutions has been sent to J&K administration and various Banks for their consideration.
- Another MoU is signed with M/s Poletus for opportunities in Artificial Intelligence ("AI") driven infectious disease like COVID-19 management platform integrated with testing technology.
- ITI signed a ToT with C-DOT for transfer of technology for manufacturing of 4 port Mini OLT, ONT23 and ONT26, GPON products.
- ITI has also diversified into development of medical electronics devices. ITI is manufacturing and supplying Face Shields, Face Masks, Face Mask Vending / Disposal machines, Manual Hand Sanitizing Dispenser (Pedal operated), Automatic Hand Sanitizing Dispenser, Sanitising tunnel, UV Blaster etc. as a part of the Government of India's effort in its fight against the ongoing COVID-19 pandemic.

- ITI has teamed up with DRDO for development of Single Outlet Automatic Resuscitator-Portable Ventilators and UV disinfection system. ITI Limited has demonstrated Portable Ventilators - Single Outlet Automatic Resuscitator (SOAR).

5.4.2.22 Performance of MSP (Marketing, Services & Projects)

ITI has 25 offices throughout India managing marketing services and project execution. ITI MSPs are doing Telecom, IT, IOT, e-Tendering, Geo Fencing & Manpower Tracking, GIS based mapping, CCTV surveillance and allied business for various State and central Govt. departments. MSPs have achieved a turnover of ₹158.43 crore as on 31.10.2020 during FY 2020-21. Tenders have been addressed against various projects such as BharatNet Phase-II project for state of TamilNadu (TANFINET), Implementation of Computer literacy Centre in 1500 Gujarat Elementary Schools in the State of Gujarat, IP based video surveillance system for Neyveli region for Neyveli Lignite Corporation, Master System Integrator for ICT Components in Dholera Special Investment Region, MPLS, P2P & ILL connectivity and procurement of network hardware & LAN Infra under RajNET Project, procurement of High capacity radio Relay etc.

MSP Offices are putting efforts to explore, address and grab new business opportunities in the field of IoT, Smart City, Smart Cards, Smart lighting /Smart Buildings, e-Market Place, Geo Fencing & Manpower Tracking /Vehicle Tracking, Integrated Command & Control Centres for Smart City components, GIS Survey / GIS mapping & GPS based solutions for Govt Depts. /Institutions/ Local Bodies etc. CCTV Surveillance, ICT Infrastructure, E-Governance, Data Centres, ERP Solutions, Solar Power Plants etc.

5.4.2.23 Performance of Srinagar Plant

Srinagar plant has started showing its performance. It has signed an agreement last year with Jammu Municipal Corporation for implementation of 'Jammu Surakhsa Yojna' project in the city. Unit has successfully completed project of digitization of records for Jammu and Kashmir Bank. Srinagar plant started a Skill development centre for implementing training programs in Telecom and IT related fields for Skill development of local youths of J&K. Unit is executing a contract for Jammu municipal corporation to supply and installation of Vehicle tracking system.

ITI has applied for training quota to Maulana Azad education foundation Delhi. Upon receipt of above project skill development activities will be initiated at Srinagar unit.

5.4.2.24 Smart Parcel Delivery System for Dept. Of Post

ITI Palakkad has developed an innovative product - Smart Parcel Delivery System (SPDS) for Department of Post to overcome the parcel delivery challenges and to improve the efficiency of Last Mile Delivery process. Pilot order for Rs. 0.24 crores received from O/O (Office of) CPMG (Chief Postmaster General) Bangalore for the supply of total 8 systems as part of product validation. All the systems have been supplied and installed successfully. Efforts are to be made to get more orders for the product.

5.4.3 Details of Achievements for The Last Three Years

Value in ₹ crore

Sl. No	Product/Project	Performance 2018-19 (Audited)	Performance 2019-20 (Audited)	Provisional Performance till 30th Nov 2020	Anticipated performance FY 2020-21
1	NFS cable laying	274.94	214.38	14.37	85.48
2	Corp Mktg & MSP	413.89	217.73	158.61	430.13
3	Defence AMC/ASCON (MoD) AMC	121.51	94.74	63.17	99.75
4	MLLN, MLLN AMC / SSTP	72.48	28.00	10.84	21.60
5	GSM-WZ Project/AMC	27.61	0.00	0.00	0.00
6	GSM-SZ / AMC	46.08	36.02	14.98	47.13
7	NGN AMC	6.98	5.15	3.53	4.25
8	OCB AMC Business	20.23	13.93	7.35	11.91
9	G-PON ONT/OLT/Titli ONT/I&C	55.20	1.42	0.42	1.55
10	Defence Business/MCEU/ MHA IP Encryptor	0.00	2.50	0.00	88.27
11	Data Centre	19.28	17.59	9.95	20.30
12	Banking / Div. Prod. /cont. Mfg./Srinagar services/ TPA/SNVM/ SNDM/3D printing/ Smart Parcel delivery system/Turnkey projects/GSM Franchisee	28.37	14.81	10.19	18.88
13	SMPS & Repair	11.55	5.41	1.41	6.68
14	HDPE /OFC	0.00	26.00	21.70	118.73
15	SATCOM & PCM MUX, CDOT AN RAX.	8.01	0.00	0.00	0.00
16	Solar Panel Mfg./LED Street Lighting	0.00	2.39	3.99	13.58
17	GujNet (including O&M)	13.31	1056.68	16.90	131.47
18	MahaNet	426.19	619.05	396.62	1396.62
19	Wi-Fi Hotspot	37.04	2.64	0.70	1.23
20	Wi-Fi Access Point	0.00	0.00	0.00	57.13
21	Smart energy meter	30.84	11.98	0.00	0.00
22	Micro PC/ Comp Screening/ E-governance/ Aadhar Business/Smart Card	6.51	17.70	3.14	90.78

23	Face Shield	0.00	0.00	2.85	6.57
24	NGN manufacturing (UTSTAR)/ CPAN	234.86	0.00	0.00	0.00
25	CCMS/Online RPF Exam	39.14	15.33	0.00	0.00
26	ASCON PH-IV	0.00	0.00	0.00	100.00
27	Airtel FTTH Rollout	0.00	0.00	0.00	65.91
28	BharatNet Andaman & Nicobar	0.00	0.00	0.00	25.10
29	Ventilator/Medical Devices	0.00	0.00	0.00	2.50
	TOTAL	**1894.02**	**2403.45**	**750.72**	**2845.55**

Note: The performance includes Taxes

5.4.4 Capital Structure

The Authorized Share Capital of the Company as on 30th September, 2020 was ₹3500 crore (₹2800 crore for Equity and ₹700 crore for Preference shares) The paid-up Share Capital as on that date was ₹925 crore (92.51 crore equity shares of ₹10/- each). The percentage share of Government of India in equity as on 30th September, 2020 is 90.27 %.

5.4.5 Financial Performance

Performance During the Years (₹ in crore)			
Particulars	**2020-21 (Till Sept. 2020)**	**FY 2019-20**	**FY 2018-19**
1. Total Revenue & Other income	686	2243	2005
2. Expenditure	844	2092	1912
3. Net Profit/Loss	(158)	151	93

Working Details

(₹ in crore)

Particular	2020-21(Till Sept. 2020)	2019-20	2018-19
Total Revenue	685.46	2242.76	2004.84
Add: ST & GST	81.10	344.58	225.67
Total Income (A)	766.56	2587.34	2230.51
Total Expenditure	843.79	2091.90	1912.30
Add: ST & GST	81.10	344.58	225.67
Total (B)	924.89	2436.48	2137.97
Profit C = (A-B)	(158.33)	150.86	92.54

Note: *Due to the implementation of IND AS during finalization of 2017-18 accounts some financial figures got restated.*

Tax Breakup

₹ in crore

Sl. No.	Particulars	6 months ended Sep 20	3 months ended June 20
1	GST	81.10	11.19

₹ in crore

Sl. No.	Particulars	2020-21 (Till Sept. 2020)	2019-20	2018-19
1	GST	81.10	344.58	225.67

Breakup of Equity Shareholding Pattern as on 30-09-2020

Sl. No.	Name of shareholder	Number of shares (Face value of ₹10 each)	Amount	% of Total number of shares after proposed allotment
1	President of India	835107008	₹8351070080	90.27
2	Government of Karnataka	312500	₹3125000	0.03
3. a	Special National Investment Fund	69480690	₹694806900	7.51
3. b	General Public	20219310	₹202193100	2.19
	Total	**925119508**	**₹9251195080**	**100**

5.4.6 Awards, Key Activities and Events

Awards

ITI Limited Wins Company of the Year- PSU Award

ITI Limited bagged the prestigious "Company of the Year – PSU Award" at the second edition of CNBC-AWAAZ CEO AWARDS 2019.

ITI Palakkad Plant Wins Outstanding Safety Performance Suraksha Puraskar in Industrial Safety

ITI Palakkad Plant won the prestigious 'Suraksha Puraskar' by National Safety Council, Kerala Chapter for achieving the lowest frequency rate of accidents in the category 'large size engineering industries' in industrial safety for the year 2019.

ITI Limited Bags National Awards for Excellence in PSU

ITI Limited is conferred with "CEO with HR Orientation Award" and "HR Excellence Award" at a prestigious online award ceremony organized by World HRD Congress on 14th October 2020.

Key Activities and Events

ITI Limited Organizes Industry Meet

ITI Limited organized a one-day Industry Meet on February 26, 2020 at ITI Bangalore Plant, Bengaluru. The event was aimed for having Industrialists and Micro, Small and Medium Enterprises (MSMEs) at one platform and to make use of available infrastructure of ITI to build one of the biggest Electronic and Telecom Manufacturing Hub in ITI.

ITI Limited Organizes Training Program on Machine Learning

A five-days training program on Machine Learning for technical professionals of ITI Limited was organized by Corporate HR&ED Department in association with IIT-Dharwad from February 24 to 28, 2020 at R&D Seminar Hall, ITI Bangalore Plant.

ITI Limited Signs Contract with Defense to Implement Rs. 7796 crore ASCON Phase-IV Project

To strengthen the communication network for Indian Army, ITI Limited, has signed a contract with Defense to implement ₹7,796 crore Phase IV Project of Army Static Switched Communication Network (ASCON) for deploying strategic network for secured communication across the country and subsequent maintenance for next 10 years.

ITI Limited Demonstrates Portable Ventilators - Single Outlet Automatic Resuscitator (SOAR)

ITI Limited forays into manufacturing of Portable Ventilators - Single Outlet Automatic Resuscitator (SOAR) at ITI Bangalore Plant.

Single Outlet Automatic Resuscitator (SOAR) is a device used to provide forced breathing to the patients or casualties who can't breathe by themselves. It can provide respiratory support to a patient in a hospital. Single Outlet Automatic Resuscitator comes with features like: Breathes per Minute (BPM) or Respiration Rate (RR), Minute Volume (MV), Airway Pressure, Demand Breathing and 100% Oxygen Supply.

5.4.7 Human Resource

5.4.7.1 Manpower strength as on November 2020 detailed in the table below:

Group	Total Working Strength	SC	ST	Women	Person With Disabilities (PWD)
Officers	2209	340	52	357	22
Non-Officers	726	160	10	126	6
Total	2935	500	62	483	28

The Company employed about 2935 employees (Executives – 2209 & Non-Executives – 726) as on 1st November 2020. About 26.64% of the employees are having professional qualification in the field of Engineering, Finance, Human Resource and Medical, around 9.54% are graduates and post graduates, 17.61% were Diploma Holders and 30.28% are Trade Certificate holders and 15.91% others.

5.4.7.2 Schemes for SC/ST Employees

The Facilities provided to SC/ST Employees:

A. exempted from payment of application / examination fee

B. Relaxation in age by 5 years in recruitment

C. Concessions in qualifying marks

D. Reservation in recruitment and promotion as per Presidential Directives.

E. Out of Turn allotment of quarters

F. Scholarship to the children of SC/ST employees

5.4.7.3 Training

The telecommunications industry is continuing to change at a remarkable speed. Disruption is taking place at a fast pace around the world. The industry began to look into data-optimized 4th-generation technologies. India is also a market where new technologies are scheduled to be employed vigorously. In the present scenario of fast changing technology and increasing competition, ITI determined to train its employees to remain updated of knowledge and skill, to offset technological obsolescence and gain competitive edge in their services.

In pursuit with the Company's vision on HRM-Training, the HRD initiatives were more oriented towards imparting Training to Executives/Non-Executives for knowledge enhancement; skill development in telecom and IT. Training Programmes and workshops were organized in New Technologies at the corporate level in the name of new technological HRD intervention by name CHINTAN – The Techno Brains – on various technologies like Wireless Technology, AI, Medical Electronics etc., through webinar. Trainings are provided on HR matters also by another HRD intervention by name MANAS – HR Maturity Forum at corporate level, pertaining to topics like Strategic HRM, PCMM-L2 Sustenance/

L3 Preparation, Talent Acquisition / Recruitment, Talent Retention, Employee Engagement etc. through webinar. Apart from the above different training programs were organized on Cyber Security and Artificial Intelligence, 5G update. Role of Wi-Fi in Broadband Proliferation, Machine Learning and Deep Learning, OFC, GPON overview & fundamentals, awareness on PLB & HDPE pipes, Li-ION Battery or SMPS, ISO9001:2015, ISO14001:2015 and OHSAS, Network Security, Presentation on DRDO Products, Tendering, procurement and contract management programme on health and stress management during COVID-19 etc., through various modes (online/offline/webinars0. Also, customized pre-boarding programme from premier institution like IIT for the Course "Hands on Machine Learning" were conducted through webinar.

In respect of HRM parameter especially pertaining to Training & Development, ITI always achieves its targets and surpasses the targets of MoU with DoT. In a nutshell, in respect of HRM-training performance/achievements for the period from April 2020 to October 2020 are as follows:

Employee Training: In-house and External Nominations:

No. of Training Programmes	No. Trained			No. of Training Man-days Achieved			Total Expenditure (₹)
	Exe.	Non-Exe.	Total	Exe.	Non-Exe.	Total	
54	1328	71	1399	1272	36	1307	124834

5.4.7.4 Skill Development Training – HR-ED

As a part of 'Skill India' Flagship programme, ITI started imparting Skill Development and Capacity Building training at various plants of ITI with its six training centres. All the centres are registered under PMKVY and also have associate membership certificates for different Job roles. Due to COVID-19 pandemic the skill development activities got hindered. ITI Could not engage students/ unemployed youth on skill development during current Financial year. During the FY 2020-21 (April 2020 to October 2020). Course-wise number of participants imparted Capacity building/Skill Development training:

Sl. No.	Skill Development /Training/Capacity Building	No. of participants
1	Apprentices- ITI Trade (NAC)	63
2	Diploma technicians Apprentices	7
3	Graduate Engineers Apprentices	8
4	In-Plant/ Internship training (ITIL module)	37
5	Finishing School (ITIL module)	102
TOTAL		**217**

5.4.8 Official Language

Implementation of Official Language Act, 1963

All Units/Marketing services and Projects ("MSP") have established "Check-Points" in their departments

to make effective implementation of the Official Language Policy. Monitoring is being done by the respective Official Language Implementation Committee constituted in every Unit/MSP.

5.5 TELECOMMUNICATIONS CONSULTANTS INDIA LIMITED (TCIL)

5.5.1 Introduction

Telecommunications Consultants India Ltd. (TCIL) is a Mini Ratna Category-I Schedule-'A' company, 100% owned Govt. of India Undertaking providing consultancy, implementation services and turnkey project execution services in the field of Telecommunications, IT, Power, Civil & Architecture. Incepted in 1978, TCIL is a torch-bearer of the great Indian Telecom Innovation, introducing new technologies in Telecom software, switching and transmission systems, cellular services, rural telecommunications, optical fiber-based backbone transmission system, etc. TCIL has a rich experience of having executed projects in and around 80 countries across the globe. Most of the projects are large turnkey projects for country governments, ministries, public sector undertakings and private organizations. TCIL today has a global presence with large projects within India, South Asia, Middle East, Africa, Europe and USA.

TCIL's core business is creating connections through communication with a vision to excel in providing solutions in Information and Communication Technology, Power and Infrastructure Sectors globally by anticipating opportunities in technology. TCIL has been working on ICT in Education projects for more than a decade, providing turnkey solutions for Computer Aided Classrooms, Smart Virtual and Digital Classrooms, Cloud and Video Conferencing solutions. Under the PAN Africa Network Project, TCIL is providing Tele Education and Tele Medicine services to African nations connecting African universities and hospitals with Indian universities/institutes and super specialty hospitals. Additionally, TCIL offers services from concept to commissioning in setting up Smart cities, Homeland security and Integrated Security Projects. The ICT @Schools program is the largest Govt. funded digital literacy program bringing digital skills to as many as 2.5 million young students in semi urban and rural areas. School project in Uttarakhand is of prime importance as it is satellite-based and provides interactive modal of education simulating real-time scenario.

TCIL has been a pioneer in setting up projects using new technology & applications in rural markets and in remote areas with geographically difficult terrain such as Arunachal Pradesh, J&K and others, offering value added service through empanelment of Start-ups, MSEs and Business Associates. A feather in TCIL's cap is the construction of a first-of-its-kind REC World Headquarter Building at Gurugram, designed to GRIHA-5 star ratings and equipped with Access controlled Lighting Management system, 100% solid waste management and rainwater harvesting system for an approximate cost of INR 500 crores. A profit making PSU (Public Sector Undertaking), TCIL is constantly trying to improve the lives of people in India through its various operations across the globe.

5.5.2 Industrial / Business Operations:

Under its recent lateral diversification and expansion strategy, TCIL has expanded its service portfolio to provide full scale project consultancy, execution and implementation in the following areas:

- Wired Line Projects - Optical Fiber Network, FTTH, OPGW, Submarine cable.

- Wireless Projects - TETRA, Mobile Technologies, In-Building solutions, QoS Audits, SatCom/ VSAT Networks.
- Tele-education and Tele-Medicine Networks- e-VidyaBharati and e-AarogyaBharati.
- E-Governance Projects for Government-to-Citizen (G2C), Government-to-Business (G2B), Government-to-Government (G2G).
- ICT@School Projects for several states.
- Security and Surveillance, Data Centre, Broadband Networks Disaster Management, IPV6, Statewide Area Network (SWAN), Managed Services e-Procurement and Video Conferencing.
- Cyber Parks, Buildings - Intelligent Buildings and Green Building System and Roads.
- Power Line Projects.
- Internet of Things (IoT), Services on Fiber, Artificial Intelligence (AI).
- Skill Development.
- Data Security and Cyber Security.
- Smart Cities and Experience Centers across India.

5.5.3 Performance Highlights:

TCIL achieved total revenue of ₹1755.76 crore during FY 2019-20. The profit after tax was ₹44.43 crore. The company has achieved Provisional turnover of ₹632.34 crore up to September 2020 for FY 2020-21. Order booking for FY 2020-21 is ₹1672.16 crore up to September 2020.

- **e -VBAB** - TCIL is highly dedicated and has been designated as the implementing agency for the e-VBAB project of Ministry of External Affairs (MEA) Govt. of India, providing Education & Healthcare Services to African Countries. Till date 17 countries have signed the agreement for service delivery under the e-VBAB project. The participating countries are – Benin, Republic of Guinea, Zambia, Malawi, Ghana, Democratic Republic of congo, Cote D'lvoire, Mauritius, Uganda, Mozambique, Comoros, Sierra Leone, Sudan, Mali, Eritrea, Gambia and Seychelles. An agreement has also been signed on 27th February at MEA Headquarters between TCIL & 6 Indian Higher Educational Institutes (Dr. D. Y Patil University, JSS Academy, Bharatividyapeeth, SASTRA, Amity University, Manipal Academy) for delivering Tele-education services in Africa, offering learners to choose from a wide range of short-term courses and long-term undergraduate and postgraduate degree, diploma and certificate programs on scholarship basis. A total of 1215 students have been enrolled under various courses so far. The next session is scheduled in January-2020. The total value of the project is ₹865 crore.
- **Telangana Fiber Grid Project (T-FIBER) -** The project is envisaged to provide infrastructure to support high-speed broadband connectivity and digital services in 10 Zones (33 Districts) of Telangana. The network would be capable of delivering 4-100 Mbps to households and on-

demand 20-100 Mbps to institutions and enterprises. It is planned to have a 100G MPLS ring connecting zones, a 40G MPLS ring is planned at Mandal (Block) level & 10G MPLS ring at GP level. TCIL bagged Package-C through open bid process at ₹1492.52 crore, as Master System Integrator (MSI) to execute the work over 3 Zones (Adilabad, KariMillionagar and Nizamabad) comprising of 10 districts (Adilabad, Komarambhem, Mancherial, Nirmal, Jagtial, KariMillionagar, Peddapalle, Rajanna, Kamareddy and Nizamabad), 180 Mandals and 2,604 Gram Panchayats. The overall scope of the work includes – Route Survey, Design & Planning of Network Architecture, OFC laying work, finalization of BoQ, procurement & supply of all active and passive equipment on the basis of approved BoQ, establishment of T-NOC & Connectivity, installation, testing, commissioning, operations & maintenance for a period of 7 years.

- **VSAT -** TCIL has been awarded a Turnkey project by Bharat Broadband Network Limited (BBNL) for Supply, Installation, Testing, Commissioning, CMAC of Gateway Baseband equipment and VSAT equipment for satellite based communication network. The project will provide backhaul connectivity to 4821 remote sites consisting of Gram Panchayats locations and DSPTs of MHA/MoD agencies spread across 24 states, under Bharat Net Project Phase-II including Operation of Gateways. The order value is ₹256.69 crore. The scope covers 2 years' warranty from the date of commissioning and 6 years of CAMC after completion of warranty. The satellite based network shall be established through two satellites namely GSAT-19 & GSAT-11 of ISRO, having Gateway Stations at Ahmadabad and Ranchi respectively. Recently, TCIL has been awarded and add-on order for procurement of Hub gateway equipment for two gateway stations, viz Delhi (GSAT-11) and Bangalore (GSAT-19) along with VSAT and solar equipment for 47 Gram Panchayats sites. The order value is ₹30.62 crore, having similar scope of work as the existing order.

- **BSNL CDR Project -** Currently the Operations Support System and Business Support System for fixed line Telecom and IP-based services of BSNL are being served by three projects namely:

  a) CDR Project-I (South DC at Hyderabad and East DC at Kolkata)

  b) CDR Project-II (North DC at Chandigarh and West DC at Pune)

  c) NIB-III Project-3 (Main DC at Bangalore, DR at Pune, Branch DC's at Mumbai & Noida)

  The objective of the new project called as (CDR Project-III) is to consolidate the functionalities of these 8 data centers and implement two state-of-the-art data centers at Hyderabad and Pune. All hardware and software are to be replaced with the new solution and a central platform is to be built to service 15 million customer bases, which includes various voice and IP-based internet services. The scope of the work includes Designing, Planning, Supply, Installation, Configuration, Customization, Integration, Testing (Validation & Acceptance Testing) and Commissioning of Hardware equipment & software modules, Migration, Training, O&M and AMC. The solution is based on Cloud concepts where Infrastructure & Platform are virtualized and custom-built as Private Cloud for BSNL's requirements. The project has been split into 3 Phases. The PO for

Phase-I (more than ₹300 crore) was raised to TCIL in Mar-2020. This is to be completed in 15 months' duration. This project will replace the existing projects of NIB-II P3, CDR P-I & P-II by consolidating all applications and business flows into one converged system of OSS & BSS for all fixed line Telecom and IP-based services provided by BSNL. Though the complexity and challenges are enormous, but on successful implementation of this project, it will be iconic to both BSNL and TCIL for the next 7-10 years.

- **Country-wide Optical Fiber Network Project for Defence** - TCIL has executed "Network for Spectrum" Project of BSNL which was designed for the Exclusive Network of Defense Services in the state of Rajasthan, Uttarakhand and Uttar Pradesh worth ₹2000 crore. The scope of work included the Survey, Design, Construction and Testing of exclusive optical NLD backbone & access routes network for Defense Services, followed by 3-Year warranty and 7-year AMC. The project involves supply of material and laying of more than 10000 kms of Optical Fiber Cable through Permanent Lubricated Ducts. More than 96% links have already been commissioned along with completion of warranty for part of the project. AMC of 7 years is in progress now.

- **GIS based OFC Network for Indian Navy** - BSNL has awarded the construction work of OFC Network for the exclusive use of the Indian Navy, Ministry of Defence (MoD) for a value of ₹555.82 crore inclusive of all taxes on 22nd July 2015. The network uses state-of-the-art technology to ensure completely secured network to Indian Navy. Project Scope involves Supply of 96F (Ribbon)/48F+8F/(Sensory Fiber) Intrusion Proof cable, 48F Armored Optic Fiber cable, 8F Mobile Field Cable, HDPE PLB, DWC, GI, RCC pipe & accessories, FDMS, Jetty Enclosures, TMFOC (Tactical Mobile Fiber Optic Cable) & accessories, ONIT, FTMS & FIPS. This project involves laying of optical fiber for entire access network distributed among four zones viz. Eastern, Western, Northern & Southern Zones covering 33 nodes consisting of 42 stations in 19 States and 4 UTs. The essence of this network lies in the monitoring of 2900 km of optical fiber carrying highly sensitive data/traffic of Indian Navy. Best part of the entire system is GIS (Geographical Information System) which is at the top layer beneath which ONIT (Telecom Inventory Tool) resides. The Inventory tool allows comprehensive data collection and transparent representation of even the most complex optical fiber for both OSP and ISP with the help of software which manages any given transmission and access technology from physical, logical to the virtual layer. This ensures the network administration & performance to be continuous, smooth and seamless. Presently, approx. 2100 Km of OFC work is completed and 11 Stations have already been commissioned. Besides, 8 Stations are completed end-to-end and further commissioning work is in progress. Remaining stations are near completion. Training Lab is also being set up at Kochi for imparting training to Navy Officers.

- **DTC** - The project envisages implementation of Surveillance System through video surveillance and automatic Vehicle Tracking System in accordance with the highest standards available for monitoring the activities of the commuters using the DTC & Cluster buses and the crew members. The objective of the project is to ensure Safety and Security of the passengers, particularly of women passengers through IP based CCTV surveillance cameras in 5500 buses of DTC & Cluster scheme. The total value of the project is ₹160.00 crore.

- **DARPAN (Postal Project)** - TCIL is executing a Rural ICT-Hardware (RH) project for Department of Posts, Ministry of Communications, (Govt. of India) for Supply, Installation & Maintenance Services of Hardware, Peripheral Devices, Operating System and Connectivity. The objective of the Rural ICT project is to provide low power technology solution (ICT Devices) to each Branch Postmaster (BPM), which will enable each of approximately 130,000 Extra Departmental Post Offices (EDO's) to improve the quality of service, add value to the service and achieve "financial inclusion" of un-banked rural population while taking advantage of the opportunity to increase revenue traffic. The total value of the project is ₹1361.73 crore. Presently more than ₹1.00 crore transactions per month were being done.

- **KUWAIT** - TCIL has executed Optical Fiber Projects for pioneer organizations in Kuwait like Ministry of Interior, Ministry of Planning, Ministry of Industry, Ministry of Information, Ministry of Defense, Ministry of Health, Ministry of Justice, AQWAF Ministry of Islamic Affairs, Kuwait National Guard, Kuwait Port Authority, Gulf SAT, Kuwait Airways, KOC, KNPC, JO Wafra, Kuwait University, PIFSS, COPRI, Central Bank of Kuwait, National Bank of Kuwait Mobile Operators like M/s Zain, M/s VIVA, M/s Ooredoo & ISPs like KEMS, FastTelco, QualityNet, GulfNet etc.

- **KSA** - TCIL has executed a number of OSP, OFC, and other miscellaneous projects in KSA (Kingdom of Saudi Arabia) with STC, MOBILY, ITC and SAUDI ARAMCO. Currently the major projects are with Dawiyat (100% subsidiary of Saudi Electricity Company), Saudi Telecom Company (STC), Integrated Telecom Company (ITC) and Etihad Etisalat Company (MOBILY). TCIL KSA is also executing Riyadh Metro relocation works with FAST, ANM and BACS consortiums. Apart from this we are also supplying technical manpower to Ericsson, Nokia-Siemens Network and few other vendors. TCIL is a major partner with ITC and Dawiyat in accomplishing the vision of Saudi Government under National Broad Band Plan Vision 2020, in providing fiber to every home.

- **CIVIL** - Ministry of Tribal Affairs (Government of India) has awarded the work for construction of 31 nos. of Eklavya Model Residential Schools (EMRS) & Eklavya Model Day Boarding Schools (EMDBS) on consultancy basis at several locations in Arunachal Pradesh, Assam, Mizoram, Bihar and Jharkhand for the total value of ₹708.00 crore.

  Railway Board (Ministry of Railway) has awarded the work for construction of Rail Over Bridges and Rail Flyovers at various locations in Odisha for the total value of ₹436.8 crore.

  Honorable Minister of Communications, Govt. of India, Shri. Ravi Shankar Prasad laid the foundation stone for Developmental works at Surya Temple in village Marchi in Patna-Bihar.

- **ICT** - TCIL has been involved in providing Computer Education and Digital Virtual Collaboration in thousands of schools in the states of U.P (1500 schools), Delhi (1100 schools), Orissa (600 schools) & Kendriya Vidyalayas across the country.

5.5.4 Human Resource Management:

TCIL has got working strength of 868 employees comprising of 401 Executives and 467 Non-Executives (including employees on deputation) as on 30.09.2020. The retirement age in the company is 60 years. Category wise status as on 30.09.2020 is given in the table below:

TCIL - Category wise employment status (Number) (Regular + Deputation)			
Particulars No's	**2020-21 (As on 30th September 2020)**	**2019-20**	**2018-19**
Executives	401	408	406
Non Executives	467	462	445
Total Employees	868	870	851

Schemes for Benefit of SC/ST/OBC category

- Reservation guidelines are followed for SC/ST/OBCs for all cadres/posts in direct recruitment which includes relaxation in age and % of marks in educational qualifications. Keeping in view the reservation guidelines, the vacancies are also reserved for SC/ST Candidates in Direct Recruitment.
- TA/DA is also paid to the candidates called for interview.
- For monitoring and implementation of reservation policy, a Liaison Officer is appointed. The concerned employees can forward their representation/grievances to Liaison Officer as well as to HR Division.
- Training programs are organized from time to time.
- An SC/ST/OBC Representative is included in Interview Selection Board and DPC for recruitment and promotions so that no discrimination on the basis of caste can be done and interests of reserved candidates is protected and they are given due preference wherever possible.
- TCIL has executed various programs for the Welfare and Socio-Economic Development under CSR Schemes.
- Keeping in view the reservation guidelines, if sufficient number of SC/ST/OBC posts is not filled up through Direct Recruitment, the necessary steps are being taken continuously by TCIL to clear the backlog through "Special Recruitment Drive".

Disinvestment of TCIL through IPO:

TCIL has received approval from the Govt. for divestment through IPO. TCIL is among the six Central Public Sector Enterprises that the government of India proposes to list on the stock exchange through public issue.

Honorable Minister of Communications, Govt. of India, Shri Ravi Shankar Prasad laid the foundation stone for Developmental works at Surya Temple in village Marchi in Patna-Bihar.

Agreement for participating in e-VBAB Network Project of Ministry of External Affairs signed between TCIL and Dr. D. Y. Patil University, Pune & JSS Academy of Higher Education and Research, Mysuru on 27th February 2020 at MEA Headquarters.

5.6 BHARAT BROADBAND NETWORK LIMITED (BBNL)

5.6.1 Bharat Broadband Network Limited (BBNL) was set up as a Special Purpose Vehicle (SPV). BBNL was incorporated on 25th February 2012 under Companies Act 1956 as a Public Sector Company for establishment and management of BharatNet in all 2.5 Lakh Gram Panchayats (approx.) of the

Country. BharatNet project is to be fully funded by Universal ServicesObligation Fund (USOF) on the basis of entire Capital Expenditure (CAPEX) and Net cost of Operating expenditure (OPEX) net of revenue for a period of 8 years w.e.f. 25.02.2012 for creation, operation and maintenance of National Optical Fibre Network.

The project earlier known as National Optical Fibre Network (now BharatNet) is being implemented in Phased manner with Phase- I covering 1 lakh GPs by tapping BSNL existing Fibre and laying incremental cable upto GPs. The technology envisaged under BharatNet is GPON and network connectivity is to be done on linear topology. Each GP shall be provided with at least 100 Mbps bandwidth on sharing basis.

National Optical Fibre Network (NOFN) had gone through reviews and Govt. has approved modified strategy for implementation of BharatNet with participation from States, private sector and CPSUs. Under Ph- II, Fibres are to be laid from Block to GP with provision to drop minimum 6 fibres at each GP. Technology offered is linear with GPON and 1 Gbps bandwidth has been planned at each GP.

5.6.2 The work execution of connecting GPs had been planned to be completed in following phases.

Phase- I: The target of completing 1,00,000 GPs under Phase- I of BharatNet has been achieved in Dec 2017. Additional 25,000 GPs are being executed as additional work front as per Phase- I methodology. More than 1,21,000 (including BHQ) GPs have been made service ready till date and remaining are plannedto be completed by the end of this financial year 2020-21.

Phase- II: BharatNet Phase- II is planned to connect remaining approx. 1,25,000 GPs directly to BHQs by optimal mix of media like underground OFC, Aerial OFC, Radio and Satellite.

5.6.3 Implementation of Phase- II of the project is proposed through three models:

- **States and state agencies:** 8 States namely AP, Telangana, Chhattisgarh, Tamil Nadu, Jharkhand, Gujarat, Odisha and Maharashtra have been implemented through State Model. Execution in States of Andhra Pradesh, Maharashtra, Chhattisgarh, Gujarat, Odisha, Telangana and Jharkhand has commenced while execution in Tamil Nadu is about to start. On 11-05-2020, DCC approved implementation of BharatNet in Uttarakhand through State led model and DPR for the same is under approval.

- **BBNL led private Model:** Two States namely Punjab and Bihar have been implemented through private sector model directly by BBNL. Work has been almost completed in both the States.

- **CPSU Model:** BSNL is executing under CPSU model Non-EPC mode in the States of MP, UPE, UPW and Sikkim. Execution of work has commenced in Madhya Pradesh and Uttar Pradesh East. However, States to be executed under EPC mode has been transferred to PPP. UP (West) and Sikkim have submitted the revised DPR which are under consideration. DCC has

further approved the implementation of BharatNet Phase- II in J&K through BSNL led CPSU model. The DPR received by BSNL isunder examination.

- **Satellite**: The satellite component of the phase- II is being implemented by BBNL & BSNL. BSNL is implementing 1407 GPs on satellite and BBNL is implementing 3596 GPs. In addition to BharatNet project, BBNL is executing re-provisioning work of DSPTs at 1409 locations. As of Nov 2020, more than 800 DSPT sites have been made operational.

  BharatNet project was reviewed by a committee headed by CEO, NITI AAYOG. The committee has recommended to utilize capacity of private sector partners in creation, upgradation, operations, maintenance and utilization of BharatNet project.

- **PPP:** For network upgradation and meeting future requirement and also village connectivity through broadband, PPP based model has been introduced which will provide ring connectivity between the BHQs (Block headquarters) and the GPs. Village shall be connected to GPs in linear topology. 17 States (Assam, Haryana, Kerala, MP, Punjab, Rajasthan, UPE, UPW, WB, HP, Arunachal Pradesh, Manipur, Mizoram, Meghalaya, Nagaland and Tripura) have been planned to be implemented in PPP mode.

5.6.4 Utilization of BharatNet Infrastructure:

To ensure the utilization of BharatNet infrastructure under modified strategy in Phase-II, Govt. has decided that implementing agencies shall not only be responsible for implementation but also for operation, maintenance and utilization of the infrastructure created under BharatNet. Further, Govt. also decided to provide 2 Wi Fi Access point in each GP area.

DCC, the then Telecom Commission has further approved to install 2 Wi Fi APs in all GPs of Phase- I through CSC a SPV of MEITY, along with 25000 GPs already approved and also 10000 GPs awarded to M/s RISL in State of Rajasthan. DCC in its decision in December 2019 had approved to convert 1 Wi Fi AP connection into 5 FTTH connection in approx. 80000 GPs, to be executed by CSC- SPV.

So far Wi Fi Hotspots installed in 99594 GPs, 475977 FTTH connections and 3737505 Mbps of Bandwidth and 17188 Kms of dark fibre have been provided through BharatNet infrastructure.

5.6.5 Share Holding Pattern: The authorised share capital of BBNL is 100,00,00,000 equity share of Rs. 10/- each i.e. total authorised capital is ₹1000,00,00,000.00. The issued, subscribed and fully paid share capital is 6,00,00,003 equity shares of ₹10/- each. Out of total issued subscribed and fully paid share capital, the Government of India holds 6,00,00,000 equity share of ₹10/- each valued ₹60,00,00,000.00. Apart from that Bharat Sanchar Nigam Limited, Power Grid Corporation of India Limited (PGCIL) and RailTel Corporation of India Limited hold one equity share each of ₹10/-.

5.6.6 Financial Performance: The Financial performance during previous years has been as follows:

Financials and Turnover						
Year	Turn Over		Total Expense	Profit / (Loss) Before Tax	Tax Expense	Profit / (Loss) after tax
	Income from Operation	Other Income				
2012- 13	-	4,01,38,687	1,50,44,208	2,50,94,479	81,83,648	1,69,10,831
2013- 14	41,33,355	7,98,79,064	5,63,31,542	2,76,80,877	99,09,874	1,77,71,003
2014- 15	41,33,354	10,91,35,562	11,46,85,467	(14,16,551)	14,39,721	(28,56,272)
2015- 16	41,33,354	12,89,45,157	18,96,75,666	5,65,97,155)	2,77,14,733	8,43,11,888)
2016- 17	32,24,500	1,06,00,61,543	78,21,99,601	28,10,86,442	5,26,05,956	22,84,80,486
2017-18	35,19,300	3,09,64,72,238	3,03,86,35,606	4,08,99,126	1,31,74,200	2,77,24,926
2018-19	57,22,103	5,83,28,58,738	5,78,52,50,231	4,54,48,298	1,18,16,560	3,36,31,738
2019-20	22,14,47,931	896,96,81,577	915,89,73,351	3,21,26,155	(2,52,352)	3,23,78,507

Note: As per audited annual financial statements.

5.6.7 Physical performance of BBNL:

S. No	State	Overall Performance of States/ UT to 04-12-2020									
		Blocks/GPs covered under Ph-I & Ph-II						GPs for which Pipe laid (incl. BHQ)		GPs for which Cable laid (incl. BHQ)		Service Ready GPs (incl. BHQ)	
		Districts	Blocks		GPs (incl. BHQ)								
			Ph- I	Ph- II	Ph- I	Ph- II			Ph- I	Ph- II	Ph- I	Ph- II	
1	Assam	27	130	99	1663	1316	1627	0	1627	0	1627	0	
2	Bihar	38	354	180	6021	2942	6009	2816	6009	2816	6003	2814	
3	Chhattisgarh	27	64	78	4116	6065	4111	2201	4111	2127	4111	2027	
4	Haryana	21	122	0	6204	0	6198	0	6198	0	6198	0	
5	J&K	22	12	304	400	4399	398	0	398	0	393	681	
6	Karnataka	30	176	0	6252	0	6248	0	6248	0	6247	0	
7	Kerala	14	152	0	1129	0	1129	0	1129	0	1129	0	
8	Madhya Pradesh	51	173	140	12701	11027	12698	3838	12698	2609	12698	1531	
9	Maharashtra	34	203	148	15372	12888	15354	6429	15354	6304	15317	2479	
10	Punjab	22	93	50	8088	4852	8040	4755	8040	4755	8040	4755	
11	Rajasthan	33	220	39	8967	1184	8916	0	8915	0	8915	30	
12	UPE	49	275	307	17904	23477	17892	8325	17878	5991	17853	2527	
13	UPW	24	167	71	10467	4396	10424	1602	10424	1187	10385	15	
14	Uttarakhand	13	30	65	1866	5840	1596	0	1568	0	1535	0	
15	West Bengal	21	291	50	3065	643	2602	0	2532	0	2430	0	
16	Sikkim	4	9	22	61	146	36	54	28	15	28	0	
17	A&N	3	7	0	67	4	42	0	28	0	8	0	
18	Chandigarh	1	1	0	13	0	13	0	13	0	13	0	

S. No	State	Overall Performance of States/ UT to 04-12-2020									
		Blocks/GPs covered under Ph-I & Ph-II				GPs for which Pipe laid (incl. BHQ)		GPs for which Cable laid (incl. BHQ)		Service Ready GPs (incl. BHQ)	
		Districts	Blocks		GPs (incl. BHQ)						
			Ph- I	Ph- II	Ph- I	Ph- II	Ph- I	Ph- II	Ph- I	Ph- II	Ph- I	Ph- II
19	Lakshadweep	1	0	0	0	10	0		0		0	
20	Arunachal Pradesh	16	68	0	745	1119	655	0	579	0	88	353
21	Nagaland	11	48	0	922	120	845	0	656	0	127	28
22	Manipur	9	14	0	664	2135	382	0	376	0	326	1062
23	Mizoram	8	13	0	275	501	167	0	130	0	41	235
24	Tripura	8	41	0	920	142	856	0	832	0	588	135
25	Meghalaya	7	23	0	971	843	606	0	356	0	122	170
26	Gujarat	33	103	135	6484	7827	6430	6905	6390	6905	6249	6669
27	D&D	1	2	0	18	0	18	0	18	0	18	0
28	D&DH	1	1	0	21	0	21	0	21	0	21	0
29	Puducherry	2	3	0	101	0	101	0	101	0	101	0
30	Andhra Pradesh	13	79	585	1694	11839	1669	0	1669	2828	1664	27
31	Telangana	30	104	587	2047	11374	2047	714	2047	396	2047	0
32	Odisha	30	181	133	3992	3103	3971	0	3970	1798	3934	1110
33	Jharkhand	24	142	118	2849	1804	2804	843	2773	824	2554	763
34	Himachal Pradesh	12	6	72	258	3011	252	0	252	0	252	115
35	Tamil Nadu	31	0	385	0	12909	0	0	0	0	0	0
TOTAL		**671**	**3307**	**3568**	**126317**	**135916**	**124157**	**38482**	**123368**	**38555**	**121062**	**27526**

Note: Status of Phase-I GPs includes additional work-front.

5.7 CENTRE FOR DEVELOPMENT OF TELEMATICS (C-DOT)

C-DOT is a premier telecom organization engaged in the research and development of state-of-the-art Telecom R&D activities as well as in the field implementation of its developed technologies. C-DOT is appraised at CMMI Level 5 for its process practices for the 'Development Projects'.

The progress on major technologies under development, field deployment, etc. is briefly summarized in the section given below.

5.7.1 Physical Performance

- C-DOT has developed Central Registry for PM-WANI which will facilitate interworking among multiple players of PM-WANI framework Public Data Office (PDO), PDO Aggregator (PDOA) and App. providers)
- Development completed for Secure Video Conferencing solution (C-DOT VC Solution). The solution is hosted in BSNL Datacenter and is being used extensively by Department of Posts, DoT and many other Government departments.
- 4G-Core Solution is developed and is under integration testing by joint teams of C-DOT and Industry Partners as part of preparation for PoC in BSNL.
- Design and development completed for indigenous latest standard (802.11ax) WiFi-6 Access Point.
- Common Alerting Platform (CAP) - compliant Early Warning System for National Disaster Management Authority (NMDA) - Pilot project successfully implemented in Tamil Nadu
- 10-Gbps symmetrical passive optical network (XGS-PON) TEC Validation for Technology Approval Certification of is in-progress.
- C-DOT has developed low cost Wireless Access Point (WAP) (WiFi-5) suitable for rural Wi-Fi to compliment National Digital Communications Policy (NDCP) 2018 goal.
- Design of Lab prototype of Quantum Key Distribution (QKD) completed.
- Commissioning of SDCN (Secure & Dedicated Communication Network) at Defence Research and Development Organization (DRDO) initiated.
- Central Equipment Identity Register (CEIR) – Integration of CEIR completed with Delhi Police for tracing of stolen mobiles.
- Installation of lab System for CERT-T (Computer Emergency Response Team-Telecom) at 3 Internet Service Provider (ISP) Gateways completed.
- Optical technology – Acceptance testing of 100G Dense Wavelength Division Multiplexing (DWDM) Ring completed in MTNL.
- Disaster Recovery site of Centralized Monitoring Centre (CMC) – Disaster Recovery (DR) at

C-DOT Bengaluru successfully tested and commissioned.

- COVID-Savdhan application developed to convey Short Message Service (SMS) in local languages.
- Interactive Voice Response System (IVRS) of Aarogya Setu App developed and launched for contact tracing with COVID-19 positive person.

The progress made in major technology programs, is briefly discussed as follows: -

5.7.2 Security related projects

- **Centralized Monitoring System (CMS)** for lawful interception and monitoring – During the year, Disaster Recovery site of CMC at C-DOT Bengaluru successfully tested and commissioned. Product design support and enhancement continued for CMS program e.g. CLI based interface for internal debugging, 4G/ Long Term Evolution (LTE) online video call interception, multiple Interception Store-and-Forward (ISF) server support in single ISF node for load enhancement.
- **Secure and Dedicated Communication Network (SDCN)** – Installation and commissioning of SDCN initiated at Defence Research & Development Organisation (DRDO) sites. The Commercial proposal has been submitted to NSCS for secured data services through core section of SDCN, PoC already completed.
- **Internet Lawful Interception Monitoring System (ISP)** – During the year, IMS installation at four new ISP Gateways completed – Airtel Noida, Airtel Manesar, Tata Sky Pune and Tata Sky Jaipur. ISP monitoring solution proposal is prepared and submitted to M/s Meghbela Broadband Pvt. Ltd.
- **Centre of Excellence for Lawful Interception (CoE) –**
  - **Samvad -** Order received from IB and Navy. Standardization Testing & Quality Certification (STQC) audit of server completed. Testing completed and deployment of 30 new features for DoT, IB and Navy. The Samvad service for IB is already running through NIC setup from the last one year. Now, it is being ported on dedicated hardware. Revamping of Samvad new Apple Push Notification mechanism for iOS completed. Navy installation completed and solution is live at their premises.
  - **C-DOT Video Conferencing Solution** – C-DOT Video Conferencing solution developed and tested during COVID-19 lockdown with many useful features like user level bandwidth controls, mute all, sorting on unmuted users, raise hand, moderator display section, buttons, configurable video grid. Pilot trial conducted at Department of Posts, DoT, Telecommunications Standards Development Society, India (TSDSI) and Mumbai Police. Solution is hosted in BSNL datacenter and is being extensively used by Government Departments
  - **Wayfinder:** Successful Completion of Proof-of-Conept (PoC) in E-building at UN, Geneva. Signing of NDA with The United Nations Office at Geneva (UNOG) completed.

Agreement finalization with UN in progress. Testing completed for Augmented Reality features in wayfinder. Web interface for admin/client developed along with other important features like positioning and navigation using Wi-Fi fingerprinting and QR code Image Processing.

- Development of **Object Intrusion Detection System** with features of object detection, classification and tracking completed

- **Face recognition** - Pilot is ongoing at IB. feature enhancements with age, gender, facial expression estimation using deep Convolutional Neural Network (CNN) algorithms for Happy, Sad, Neutral, Angry, Disgusted, Surprised expressions and features of face comparison utility. Development and testing of Android App using sentiment and emotion models completed.

- **Quantum Safe Cryptography (QSC)** - C-DOT's Compact Encryption Module (CEM) product has been offered to STQC for Enhanced Assurance Level (EAL) evaluation under Common Criteria Security Testing Framework.

- **Quantum Key Distribution (QKD)** - C-DOT initiated activities in the area of Quantum communications by taking up development of Quantum Key Distribution (QKD) and has successfully designed a laboratory prototype of QKD at C-DOT, Delhi.

5.7.3 Optical technology related projects

- **Dense Wavelength Division Multiplexing (DWDM)** - Acceptance testing of 100G DWDM system completed in MTNL. Validation of 100G DWDM system completed for linear, ring, Mesh and point-to-point architecture.

- **Packet optical transport platform (POTP) –** During the year, validation completed for 1.6 Tera capacity POTP system in limited configuration. Validation completed for Network planning tool for integrated solution of 1.6T POTP and 100G DWDM system. Validation commenced for 1.6 T POTP EMS system.

- **Time & Wavelength Division Multiplexing-Passive Optical Network (TWDM-PON)** - TEC Validation for Technology Approval Certification of 10-Gbps symmetrical passive optical network (XGS-PON) is in-progress. Field trial site allocated. Validation of EMS for XGS-PON has been completed. Initial Validation of XGS-PON MiniOLT and NGPON2 has been completed. Hardware Schematics designs for 5G Front Haul cards are over, CAD work is in progress.

5.7.4 Switching and routing technology

- **High Speed Routing System (HSRS)** – Software development completed for 100 Gbps Ethernet interface and offered for validation. The performance testing is in-progress. EMS The development completed and integration testing is in-progress. EAL-3 certification has been received for C-DOT Stackable Terabit Router (CRAT-100). Integration of secure router EMS integrated with C-DOT-NMS.

- **Local Area Network (LAN), Metropolitan Area Network (MAN) enterprise and data centre segment** - Validation completed for 48 port Ethernet switch. Development completed for EMS software for Ethernet switch. Integration testing and software porting on reference hardware completed on single switch for ToR (Top of Rack) configuration.

5.7.5 Satellite based technology

- **Satellite Hub Baseband system –** Field Testing of Carrier grade hub baseband system supplied to DEAL ongoing. Testing completed for additional feature like new wideband demodulator, including testing of voice calls and data. Enhancement of SMS demodulator algorithm completed to improve the performance of the system already deployed in the field.

- **Digital Video broadcasting (DVB) S2 Hub Baseband System –** Algorithms coding completed for DVB-S2 modulator and tested the video transfer successfully using prototype Hardware. Development in progress for prototype MF-TDMA demodulator for DVB- RCS channel. Video transfer successfully tested for Moving Picture Experts Group (MPEG) Traffic channel without channel decoder. Algorithm coding in progress for multiple modulation schemes and Channel coders to improve the channel performance of DVB-S2 system. ATCA form factor Hardware under development for Bank of Modulators and Demodulators. RF card development in progress.

- **C-SAT-FI -** Architecture design and development of Content Server and Element Management System (EMS) completed for C-Sat-Fi. Proof-of-Concept (PoC) successfully completed at Harsihtal and Talli Sethi Village of Nainital District of Uttarakhand with BSNL. Technology demonstration at Gokulpur and Birchandranagar village of Udaipur District of Tripura, North East with BBNL/USOF.

5.7.6 Telecom Services & Applications

- **Machine to Machine (M2M) Communication -** C-DOT Common Service Platform (CCSP) for Machine to Machine (M2M) communication has been enhanced with oneM2M Release 3 features i.e. 3GPP (3rd Generation Partnership Project) Interworking for Non IP Data Delivery (NIDD) and Semantics. 32 technical contributions to the oneM2M standards were accepted. C-DOT participated in oneM2M Interop 7 event, held from 16th to 27th Nov, 2020. Interoperability and Conformance testing of CCSP was successfully performed with ETSI, Spirent, Metabuild (S. Korea), Exacta (USA), LAAS CNRS (France). Interoperability testing of ADN-AE was successfully completed with Metabuild (S. Korea), Exacta (USA), LAAS CNRS (France), KETI and ACME. Design of 4G LTE - SCEF Service Capability Exposure function) Node completed for NIDD to support NB-IOT in 4G.

  Design of Long-Range (LoRa) based Smart Street Light Application completed. Design and Development of a prototype of LoRa based patient quarantine system completed. Pilot implementation of Automatic Number Plate Recognition (ANPR) based C-DOT Vehicle and Visitor Management Application was completed in C-DOT Campus.

5.7.7 Wireless Technologies

- **5G technology development –**
  - **5G-CORE -** Preparation of specifications for Procurements related to 5G trials and 5G Core development.
  - **5G Data plane analytics -** Software development of accelerated 4G EPC Core User Plane and Security Gateway has been completed on Intelligent NIC. The testing is in progress on reference hardware.
  - **5G-RAN-** C-DOT's existing 4G LTE converged core network is being upgraded to support basic 5G non-standalone mode operations. Creation of 5G Lab infrastructure for demonstration and simulation of various use cases. 5G gNodeB Baseband Unit Architecture Ready and design in progress
- **Long Term Evolution (LTE) enhancements, customization and trial –**
  - **4G-CORE -** Solution is developed and is under integration testing by joint teams of C-DOT and Industry Partners as part of preparation for BSNL PoC. Evolved Packet Core (EPC) integration with CMS for lawful interception completed. Subscriber provisioning system and Home Subscriber Server (HSS) completed.
  - **4G-RAN –** 3-Sector Radio Access Network (RAN) solution under testing in C-DOT Bangalore. Engagement started with multiple system integrators (TCS, L&T, ADTL, and Vista). MoU signed M/s. Alpha Design Technologies Pvt. Ltd for working together on LTE solution for Defence technology. Discussions in advanced stage with M/s.Vista ISPL and RDSO for working together on LTE solution for Railways network.
- **Public Wi-Fi Access Network Interface (PM-WANI)** – C-DOT is facilitating the PM-WANI roll-out with WANI compliant low cost access point i.e. Mini PDO and wireless access point (WAP) for PDOs. C-DOT has also developed a platform as a service for PDOAs for authorization, accounting, voucher management and payment gateways. C-DOT C-WANI app. Is available to access public Wi-Fi under PM-WANI framework.
- **Wi-Fi technology**–
  - Design & development completed for the indigenous Wi-Fi-6 Access Point technology product.
  - Wireless Access Controller (WAC) deployment is in-progress for 6000 access points in CSC / Bharatnet network.
  - C-DOT has developed low-cost Wireless Access Point (WAP) supporting dual band (both 2.4 Ghz and 5.8 GHz) on 802.11ac Wi-Fi-5 standard. This is the optimized version of C-DOT High Speed Access Point (HAP) which is suitable for rural Wi-Fi to compliment NDCP2018 goal. M/s Aggressive begged the order of CSC Wi-Fi Chaupal for 6,000 villages.

- Successful completion of POC testing of C-DOT Wi-Fi LTE Gateway product for M/s. Lab2Market (IISc start up for Cyber Railway Signaling using C-DOT RAN).

5.7.8 Next Generation Cloud Projects

- C-DOT successfully Transformed/ Modernized existing in-house IT infrastructure for supporting next generation cloud native application development / Open Source Technologies, which not only saved huge amount of license fees, but also helped in easy and efficient management of compute /storage/ network resources thus avoiding underutilization of IT resources.

- With its cloud technology, C-DOT has acquired capability to host an application on production scale cloud with end-to-end capability and the same was demonstrated in successful hosting of Covid-Savdhan in C-DOT cloud.

5.7.9 Field Implementation of Major Projects

- **National Disaster Management Authority (NDMA)** - Pilot project successfully implemented in Tamil Nadu. PAN India proposal is under consideration of DoT and NDMA.

- **NMS** - UNMS (Unified NMS) integrated with Business Exchange Gateway (BEG). Acceptance testing for BEG Completed in BBNL Sites. Onsite installation & acceptance testing completed for Converged NMS. Supply, Installation, Testing and Commissioning of C-DOT Network Management Solution for AAI Kolkata Airport.

- **Gigabit Passive Optical Network (GPON) Technology** – New cost effective ONT (ONT-23) validated and ToT done to ITI for M/s CSC. New cost effective Office OLT under development. Network stability and testing completed for ONT-17A in GPON network at Indian Cost Guard HQ New Delhi. Bench testing and Environmental testing under TSEC Testing of GPON Solution with 8-PON port line card, ONT-17A and ONT-24 manufactured by M/s ITI, has been completed at C-DOT Delhi campus. Bench testing completed for Technical Specification Evaluation Certificate (TSEC) of GPON Solution with 8-PON port line card, ONT-17A and ONT-24 manufactured by M/s Cyient. TSEC Certificate received by M/s Cyient, with C-DOT's support, for GPON Solution with new Mini-OLT and ONTs manufactured by M/s Cyient.

5.7.10 DoT projects

- **Cyber Security for CERT-Telecom -** Enhancement of C-DOT's 200Gbps Internet Protocol Flow Information Export (IPFIX) probe with new features of dynamic template and DPI with application level identification. Lab System deployed at 3 ISP Gateways (BSNL Delhi, Vodafone Gurgaon, Airtel Delhi). POC completed and demonstrated to a committee comprising of experts from IB, MHA, NSCS, NCIIPC, TEC, MeiTY, and DRDO. Development of CTAS (Cyberspace Threat Analytics System) application as a part T-CERT project to support Multi-Stakeholders. Detailed Project Report of the project for National rollout submitted to DoT for approval.

- **Central Equipment Identity Register (CEIR)** - Integration completed with Delhi Police. EIR/ Equipment Identity Register (MSC) simulator completed for demonstration and load testing of CEIR real-time query-response system for CEIR Phase-2 implementation. Fault ticket management and system alarm display panel implementation completed. Regular operational support provided at sites and implementation of enhancement as per field requirements.
- **Central Registry for PM-WANI**: C-DOT has developed Central Registry for PM-WANI to ensure the interworking among system and software applications used by various entities of PM-WANI framework i.e. PDO, PDOA and App. Provider.

5.7.11 NSCS Projects-

C-DOT received approval from NSCS (National Security Council Secretariat) for Research & Development of Post-Quantum Inline 1Gbps data-rate Network Encryptor (PINE) and Quantum-secure smart Video IP Phone (QSSIP).

Hardware board design completed for PINE and (QSSIP) with smart AI-based features such as voice commands, face recognition and gesture-based commands.

5.7.12 C-DOT Transfer Technology Program

The technology of cost-effective wireless solution was transferred to a Private Sector Licensee during the period. Cumulatively C-DOT ToT agreements stand at 99 with 27 Licensees for 30 Technologies, and thereby a manufacturing eco-system for production of indigenous technology has been established to realize Government's Make-in India and Digital India programs.

5.7.13 Events & Awards

➢ **Events**

- **Launch of C-DOT Video Conferencing Tool**

In line with the push towards greater self-reliance, C-DOT has developed a secure video-conferencing platform for use by the government and other strategic sectors. The need for an indigenous platform was felt during the Covid-19 outbreak, which resulted in a nationwide lockdown. Given the likelihood of the "new normal" in the post-coronavirus era, VCs would be required for the functioning of most government departments.

The VC solution was officially launched by Shri Ravi Shankar Prasad, Hon'ble Minster of Communications and Shri Sanjay Shamrao Dhotre, Minister of State on 22nd May 2020. The solution was officially inaugurated by holding a Video Conference meeting with 23 Chief Post Masters General (CPMsG) from Department of Posts across India.

- **Launch of 'Five Star Villages Scheme' through C-DOT VC solution**

Shri Sanjay Shamrao Dhotre, Hon'ble Minister of State, for Education, Communications, Electronics & IT, and Government of India launched the 'Five Star Villages Scheme' through Department of Posts to ensure universal coverage of flagship postal schemes in rural areas of the country. The scheme seeks to bridge the gaps in public awareness and reach of postal products and services, especially in interior villages.

The whole launch was done through C-DOT VC solution on 10th September 2020 which is already in extensive use in the Department of Posts.

- **EAL3 Certification for C-DOT Router**

The C-DOT Terabit Router (Model: CRAT-100/CRDT-100) has been certified Evaluation Assurance Level (EAL-3) for its security features by Indian Common Criteria Certification Scheme (IC3S).

The Common Criteria for Information Technology Security Evaluation (referred to as Common Criteria or CC) is an international standard (ISO/IEC 15408) for computer/IT product security certification. The evaluation of the features of C-DOT Router was done by the Common Criteria Test Laboratory, ERTL (E), STQC, Kolkata.

This exercise spanned four years and involved a lot of additional development, documentation (as per their recommended format) and multiple iterations of testing and on-site validation.

- **Participation in Virtual Exhibitions**

C-DOT participated in the virtual India-Africa ICT Expo 2020 event on 1st to 2nd December 2020 and in virtual India Mobile Congress 2020 event from 8th to 10th December 2020. In view of the present situation on account of the adverse impact of COVID-19 pandemic, it

was not feasible to organize and participate in the physical fairs/exhibitions and buyer-seller meets. Hence, the need of an hour is to move ahead and shift our focus from participating in physical exhibitions to virtual shows to connect with overseas buyers and build long term business engagements. Product Information and videos of latest C-DOT technologies were made available for access of potential customers.

➢ **Awards**

- **7th eNabling North East [eNorth East] Award 2019-2020**

"C-DOT Satellite Wi-Fi (C-Sat–Fi)," an innovative solution developed by the Centre for Development of Telematics (C-DOT), was selected as the SPECIAL MENTION (RUNNERS UP) of the 7th eNabling North East [eNorth East] Award 2019-2020 in the Category – 'Information communication technology for development'. C-DOT was honored "For its effort to provide digital connectivity through its C-Sat-fi technology towards connecting aspirational villages and enabling social impact in e-health, e-education and e-governance services in the State of Tripura" and the award was announced during the final event of the 7th eNorth East Award, held on June 20, 2020.

5.7.14 C-DOT's Contribution during COVID-19

- **COVID-19 Savdhaan**

Covid Savdhan application enables authorities to reach out to all mobile subscribers in any particular containment zone up to the level of individual mobile tower and convey targeted messages about health, well-being, water supply etc. by means of SMS in local language. The messaging service is available in all regional languages.

- **Arogya Setu IVRS**

The government recently launched the Aarogya Setu Interactive Voice Response System (IVRS) developed by C-DOT, to cover feature phone and landline users. Initially only smartphone users

were able to use the Arogya Setu application and get updates on whether they have unknowingly come in contact with a COVID-19 **positive person and can contract the virus.**

The IVRS service is available across India. This is a toll-free service, where a feature phone and landline user will need to give a missed call to the number 1921 and will get a call back requesting for inputs regarding their health. The questions asked are aligned with Aarogya Setu app, and based on the responses given by the person. The person will get an SMS indicating their health status and alerts. The service is now available in 11 regional languages just like the mobile application.

- **Covid-19 Quarantine Alert System (CQAS)**

The Department of Telecommunications (DoT) has shared a Standard Operating Procedure (SOP) with all telecom service providers regarding the application called COVID-19 Quarantine Alert System (CQAS) developed by C-DOT.

CQAS collects phone data, including the device's location, on a common secure platform and alerts the local agencies in case of a violation by COVID patients under watch or in isolation.

The CQAS prepares a list of mobile numbers, segregates them on the basis of telecom service providers, and the location data provided by the telecom companies is run on the application to create geo-fencing. The location information is received periodically over a secure network for the authorized cases with "due protection of the data received". The System triggers e-mails and SMS alerts to an authorized government agency if a person has jumped quarantine or escaped from isolation, based on the person's mobile phone's cell tower location.

5.7.15 HR Initiatives in C-DOT

Employees' Welfare:

- For the purpose of coverage for hospitalization expenses, C-DOT has taken a Tailor-made group medi-claim insurance from National Insurance Company Ltd for Staff members (and their families). The staff in EI grade and below has a coverage of ₹3.5 lakhs and above and Staff in EII grade and above have a coverage of ₹5 lakhs and above (₹7.5 Lakhs, ₹10 Lakhs and ₹15 Lakhs). The Group Medi-claim policy has been made effective from 01 April 2006.
- C-DOT has Grievance redressal mechanism for its staff to provide them with an easy & readily accessible machinery for prompt disposal of their day-to-day grievances.

- **Recruitment of SC/ST:**

- For recruitment of persons with disabilities and candidates belonging to SC/ST category, C-DOT follows government rules providing for reservation in jobs in C-DOT.
- C-DOT has a system in place to look after the welfare of persons belonging to these categories and address any problems / complaints that may come up.

Trainings

C-DOT has Knowledge Management Groups (KMG) at its Delhi and Bangalore offices, which takes care of all organizational training needs. Number of in-house trainings as well as external trainings are organized for skill enhancements of C-DOT employees.

The COVID pandemic during the said period limited the training activities at C-DOT. So adapting to the prevailing situation, C-DOT organized number of online trainings.

- Total 65 nos. of technical trainings were organized and 115 employees attended these trainings.
- Total of 9 nos. of Behavioral & Soft skill trainings were organized and 33 employees benefitted from these trainings.

Also information about various technical webinars relevant to telecom industry were shared within C-DOT staff. Around 114 numbers of webinars were circulated internally and 212 nos. of people attended the same.

Anticipated Achievements during January – March 2020

The achievements anticipated in the last quarter (Jan.-March) of the financial year 2020-21, are as follows:

- Launch of PM-WANI for public Wi-Fi rollout as per the TRAI framework. Central Registry (CR) developed by C-DOT will be hosted for public Wi-Fi rollout.
- Launch of Wi-Fi-6 and ToT completion for Wi-Fi-5.
- Prototype readiness for 5G-new Radio non-standalone gNodeB, Narrow-Band (NB) -IoT Base Station. Basic lab infrastructure for 5G technology based systems establishment.
- Field Trial of cloud based next generation firewall. Integration testing of user data plane accelerator with 5G nodes.
- Pilot/ Field trial for 1.6 Tbps Packet Optical Transport Platform (POTP) system. Architecture design of SDN solution with a prototyping system.
- XGS-PON (Mini Optical Line Termination (OLT)) EMS validation and offer for Transfer of Technology. Pilot/Field trial commencement for NGPON2 (chassis-based). Offer for Internal validation of XGS-Ring ONT. Hardware development of 5G Front Haul (FH) OLTs and 5G FH ONTs.
- Pilot trial of high-speed router with 100G ethernet interface. Pilot trial of compute node with intelligent Network Interface Control (NIC).
- Pilot trial for 48-port L2/L3 switch, medium-capacity ToR switch. System integration and testing of high capacity ToR and Spine switches.
- Integrated and tested enhanced DVB Hub Baseband System consisting of modulator, MF-

TDMA demodulator units etc.

- Design and development completion for C-Sat-Fi Access Point Box (CAP) and C-Sat-Fi Customer Premise Equipment (CCP).
- Pilot trial of face detection and recognition engine in controlled and uncontrolled environment for various angles, clothes, disguise, etc.
- Android and iOS app showing 2D routes in UN buildings in Geneva.
- Integration of Quantum-safe Encryptor (CEM) in 5G test bed, WiFi network (using C-DOT BBWT) and satellite network scenario.
- ToT of C-DOT switching and routing technology to additional manufacturers.
- Pilot Trial of Small ONT with WiFi. Hardware and software development of Low Cost Office OLT.
- 3-Sector eNodeB comprising of 40W Remote Radio Head (RRH), Baseband hardware, and software ready for ToT.

CHAPTER 6

Regulatory and Appellate Bodies

6.1 THE TELECOM REGULATORY AUTHORITY OF INDIA (TRAI)

Telecom Regulatory Authority of India (TRAI) was established in the year 1997 in pursuance of TRAI (Ordinance) 1997, which was later replaced by an Act of Parliament, to regulate the Telecommunication services. In 2004, Broadcasting the Cable Services were also notified as Telecommunication service.

The Authority consists of a Chairperson, not more than two whole –time members and not more than two part-time members to be appointed by the Central Government. TRAI was headed by Dr. R.S. Sharma till 30/09/2020, the former Secretary in the Department of Electronics & Information Technology, Government of India as Chairperson. At present, TRAI is headed by Dr. P.D. Vaghela, the former Secretary in the Department of Pharmaceuticals, Government of India, w.e.f. 01/10/2020.

The Telecom Regulatory Authority of India (TRAI) has been working with a mission to ensure and protect the interests of consumers and service providers. Efforts have been made for creation of conducive environment for the growth of telecommunications, broadcasting & cable services sector and nurture it in a manner and pace to enable India to play a leading role in the emerging global information society. The Authority initiated various measures to promote the growth and development of the telecom and broadcasting sectors during 2020. These measures have resulted in overall benefits to the industries and consumers in terms of choice of services, affordable tariff, and better quality of services etc, as is evident from the exponential growth in these sectors.

During the year, apart from discharging various recommendatory and regulatory functions duly considering various issues faced by the telecom sector, the Authority took requisite measures to address concerns arising from spread of COVID-19 pandemic. The key measures taken to address the situation arising from spread of COVID-19 pandemic and various regulatory initiatives taken by the Authority including the recommendations to the Government on key issues concerning telecommunications sector, framing Regulations, issuing Directions to service providers and issuing Consultation Papers are discussed briefly in the following paragraphs:

6.1.1 Recommendations

During the year 2020-21, the Authority made following recommendations to the Government:

- **TRAI's Response dated 10th April 2020 to DoT back reference dated 12th March 2020 on Recommendations on "Captive VSAT CUG Policy Issues"**

  TRAI had sent its recommendations on "Captive VSAT CUG Policy issues" on 18th July 2017 to the Department of Telecommunications (DoT). DoT vide its letter dated 12th March 2020, referred back some of the recommendations for reconsidered opinion/recommendations.

After considering the views given by the DoT, the Authority has furnished its response to the Government on 10th April 2020. The salient recommendations after considering the back reference of DoT, are as below:

(i) The amount of initial Financial Bank Guarantee (FBG), which is submitted by the applicant company prior to signing of Captive VSAT CUG license, should be reduced from Rs. 30 Lakhs to Rs. 15 Lakhs. For subsequent years, it should be equivalent to the estimated sum payable equivalent to the license fee for two quarters.

(ii) The royalty charges should be limited to the charges only for the assigned frequencies. There is no justification for charging additional 25% amount as reuse factor for number of VSATs more than the number of carriers.

(iii) It has been recommended to create a Single Window procedure to cater to the requirements of applicant/ licensee companies for the entire processes that are involved in obtaining license, approvals/ clearances related to space segment, ground segment, etc. in respect of Captive VSAT CUG License.

The recommendations have been placed on TRAI's website www.trai.gov.in.

- **Recommendations dated 22nd April 2020 on "Network Testing Before Commercial Launch of Services for Wireline Access Services"**

A reference was received from the Department of Telecommunications (DoT) vide its letter dated 16th July 2019 wherein it was communicated that the Government has accepted TRAI's recommendations on 'Network Testing Before Launch of Commercial Services' dated 4th December 2017, and has further requested to provide similar recommendations on Network Testing before commercial launch of Wireline Access Services under the provisions of clause 11(1)(a) of TRAI Act, 1997 as amended by TRAI Amendment Act, 2000.

In accordance with the reference received from DoT regarding Wireline Access Services, a consultation process was initiated to frame recommendations to decide the norms of network testing before commercial launch of Wireline Access Service. However, as most of the issues raised and examined during the consultation process for framing the recommendations on "Network Testing Before Launch of Commercial Services" dated 4th December 2017, were equally applicable for Wireline Access Services, the Authority issued detailed draft recommendations on "Network Testing Before Commercial Launch of Services for Wireline Access Services" on 31st December 2019 to seek inputs from stakeholders on relevant issues.

Based on the comments/inputs received from the stakeholders and on its own analysis, TRAI has finalized its recommendations on "Network Testing Before Commercial Launch of Services for Wireline Access Services" and sent to DoT for its consideration.

- **Recommendations dated 29th May 2020 on "Ensuring Adequate Numbering Resources for Fixed Line and Mobile Services"**

A reference was received from the DoT vide its letter No. 20-281/2010-AS-I Vol. XII (pt.) dated 8th May 2019, wherein it was requested to furnish recommendations on the strategies of National Digital Communications Policy 2018 which inter alia includes 'Ensuring adequate numbering resources, by developing a unified numbering plan for fixed line and mobile services'.

Accordingly, a Consultation Paper on 'Developing a Unified Numbering Plan for Fixed Line and Mobile Services' was issued on 20th September 2019 seeking views/comments from stakeholders. In this regard, an Open House Discussion (OHD) was also held on 16th January 2020 at TRAI, New Delhi.

Based on the comments/inputs received from the stakeholders, discussion held during OHD and on its own analysis, TRAI finalized its recommendations on "Ensuring Adequate Numbering Resources for Fixed Line and Mobile Services" and sent to DoT for consideration.

- **TRAI's Response dated 5th June 2020 to DoT back reference dated 29th May 2020 on Recommendations on "Proliferation of Broadband through Public Wi-Fi Networks"**

Department of Telecommunications (DoT) vide its back-reference letter No. DS-16/13/2017-DS-III dated 29th May 2020 sought reconsideration of TRAI recommendations dated 9th March 2017 on "Proliferation of Broadband through Public Wi-Fi Networks".

Imposition of licensing conditions of Integrated model on 'unbundled and distributed model', would not be feasible as any particular type of entity, envisaged under the recommendations, on its own would not be able to comply with all terms and conditions of UL or UL (VNO). Accordingly, a need was felt to develop separate licensing framework in the form of registration specific to each type of entity. As these entities are small and are obliged to lease bandwidth from the existing TSPs/ISPs only, the Authority recommended that they need not pay any license fees on revenue sharing basis.

TRAI, after due deliberations, finalized its response and forwarded it to DoT.

- **Recommendations dated 28th July 2020 on "Provision of Cellular Backhaul Connectivity via Satellite Through VSAT Under Commercial VSAT CUG Service Authorization"**

Department of Telecommunications (DoT), through its letter dated 13th August 2019 requested TRAI to furnish recommendations on terms and conditions of Unified License and Unified License VNO agreement for permitting backhaul links for mobile network via satellite through VSAT.

The Authority after proper Consultation Paper (CP) process furnished its recommendations on "Provision of Cellular backhaul connectivity via Satellite through VSAT under Commercial VSAT CUG Service Authorization" on 29th January 2020. TRAI released its recommendations on "Provision of Cellular backhaul connectivity via. Satellite through VSAT under Commercial VSAT CUG Service Authorization" on 28th July 2020. The salient features of these recommendations are: -

(a) The Commercial VSAT CUG Service provider should be permitted to provide backhaul connectivity for cellular mobile services through satellite using VSAT to the Access Service providers. They may also be permitted to provide backhaul connectivity using VSAT to Access Service Providers for establishing Wi-Fi hotspots.

(b) Enabling provisions should be made in stand-alone Commercial VSAT CUG Service license, Unified License, and Unified License (VNO) for provision of backhaul connectivity by Commercial VSAT CUG Service provider.

(c) Sharing of VSAT Hub for the purpose of providing authorized services should be allowed to the entity having license / authorization for both Commercial VSAT CUG and NLD services.

(d) Sharing of active and passive infrastructure owned by a licensee under any of the service authorizations should be permitted for providing other services authorized to licensee under other authorizations or stand-alone licenses.

(e) Spectrum charging for VSAT services in NLD license/ authorization should be prescribed as a percentage of AGR. Replacing the existing formula-based mechanism, Spectrum usage charges for using satellite frequencies under the NLD service license/ authorization should be prescribed as 1 % of AGR excluding the revenue from the licensed services other than satellite-based services.

(f) There should not be any barrier on the carrier speeds and, therefore, higher data rates, which are now possible in satellite communications with the use of latest technologies, should be permitted without any restrictions.

➢ **Recommendations dated 17th August 2020 on "Methodology of applying Spectrum Usage Charges (SUC) under the weighted average method of SUC assessment, in cases of Spectrum Sharing"**

Department of Telecommunications (DoT) through its letter dated 15th January 2020, inter alia, informed that the existing guidelines for Sharing of Access Spectrum by Access Service Providers issued by DoT on 24th September 2015 provide that the Spectrum Usage Charge (SUC) rate of each of the licensees post sharing increases by 0.5% of Adjusted Gross Revenue (AGR). DoT also informed that it has received representations requesting that the incremental SUC rate of 0.5% post sharing should be applied only to the particular spectrum band which has been allowed to be shared between two licensees, and not on the entire spectrum held by the licensees; since sharing is permitted in a particular band. In this background, DoT requested TRAI to furnish its recommendations on (i) whether the incremental 0.5% in SUC rate in cases of sharing of spectrum should be applied only on the specific band in which sharing is taking place; or on the overall Weighted Average Rate of SUC, which has been derived from all bands and (ii) any other recommendations deemed fit for the purpose, under the TRAI Act, 1997, as amended.

In this regard, a Consultation Paper on "Methodology of applying Spectrum Usage Charges

(SUC) under the weighted average method of SUC assessment, in cases of Spectrum Sharing" was released on 22nd April 2020 providing the background information and seeking inputs of the stakeholders. An Open House Discussion (OHD) was conducted through video conference on 9th July 2020.

Based on the comments/inputs received from the stakeholders and on its own analysis, on 17th August 2020, TRAI finalized its recommendations on 'Methodology of applying Spectrum Usage Charges (SUC) under the weighted average method of SUC assessment, in cases of Spectrum Sharing' and sent to the Government. The salient features of the recommendations are:

(i) It is clarified that as per the existing spectrum-sharing guidelines, an increment of 0.5% on SUC rate should apply on the spectrum holding in specific band in which sharing is taking place, and not on the entire spectrum holding (all bands) of the Licensee.

(ii) To provide flexibility to the TSPs to manage their spectrum on need and commercial basis, suitable exit clause for intimation of termination of an existing spectrum-sharing arrangement by the involved TSPs should be included in the spectrum sharing guidelines.

- **Recommendations dated 14th September 2020 on "Regulatory Framework for Over-The-Top (OTT) Communication Services"**

DoT vide letter dated 3rd March 2016 sought the recommendations of TRAI on net neutrality including traffic management and economic, security and privacy aspects of services, apart from other relevant standpoints as covered in the consultation paper dated 27th March 2015.

Considering the complexity of issues, referred to in DoT's letter, and other interrelated issues, the Authority decided to deal with specific issues through distinct consultation processes.

TRAI issued a consultation paper on 12th November 2018 on the residual issue i.e Regulatory framework for Over-The-Top (OTT) Communication Services and raised various issues for comments and counter comments from stakeholders. Subsequently, two Open House Discussions (OHD's) were also held.

Based on the comments received and further analysis, the Authority finalized its recommendation on "Regulatory Framework for Over-The-Top (OTT) Communication Services" and forwarded to DoT.

- **Recommendations dated 14th September 2020 on "Cloud Services"**

While conveying its acceptance of TRAI's recommendation on Cloud Services, the Department of Telecommunications (DoT) vide letters No. 4-4/ Cloud Services/ 2017-NT dated 27th September, 2018 and 6th May, 2019 sought additional recommendations on "the terms and conditions of registration of Industry body, Eligibility, entry fee, the period of registration, and governance structure, etc.

Pursuant to this reference, TRAI issued a consultation paper on 23rd October 2019 and raised various issues for comments and counter comments from stakeholders. Subsequently, an Open

House Discussions (OHD) was held in Delhi on 28th February 2020.

Based on the comments received and further analysis, the Authority finalized its recommendations on "Cloud Services" and forwarded to DoT.

- **Recommendations dated 22nd September 2020 on "Traffic Management Practices (TMPs) and Multi-Stakeholder Body for Net Neutrality"**

While conveying its acceptance of TRAI's recommendation on Net Neutrality, DoT vide letter dated 31st July, 2018 and 17th June, 2019 sought additional recommendations on the Traffic Management Practices (TMPs) and Multi-Stakeholder Body i.e. the necessary Traffic Management Practices (TMPs), and the composition, functions, role, and responsibilities of the multi-stakeholder body for consideration of DoT.

Pursuant to this reference, TRAI issued a consultation paper on 2nd January 2020 and raised various issues for comments and counter comments from stakeholders. Subsequently, an Open House Discussions (OHD) was held in Delhi on 24th June 2020.

Based on the comments received and further analysis, the Authority finalized its recommendation on "Traffic Management Practices (TMPs) and Multi Stakeholder Body for Net Neutrality" and forwarded to DoT.

- **DoT's back-reference dated 28th September 2020 on Recommendations on "Review of Terms and Conditions for registration of Other Service Providers (OSPs)" dated 21stOctober 2019**

DoT vide its letter No. 18-5/2015-CS-I (pt.) dated 26th September 2020 informed that the recommendations on "Review of terms and conditions for registration of Other Service Providers (OSPs)" dated 21st October, 2019 have been examined by the Government and it has been decided to refer back of the following issues for reconsideration under Section 11 of the TRAI Act, 1997: -

(1) Categorisation of OSP based on Voice or Data

(2) Bank Guarantee

(3) CCSP/HCCSPs

(4) Network Diagram

(5) Foreign PABX for International OSPs

(6) Penalty

(7) Work from Home

(8) Interconnection of Data and Voice path

TRAI, after due deliberations, has finalized its response and sent to DoT.

6.1.2 Regulations

- **The Telecommunication Interconnection Usage Charges (Sixteenth Amendment) Regulations, 2020 dated 17th April 2020**

  The Telecom Regulatory Authority of India (TRAI) issued "The Telecommunication Interconnection Usage Charges (Sixteenth Amendment) Regulations, 2020" on 17th April 2020. Through these Regulations, the regime of fixed International Termination charges (ITC) @ Re.0.30 per minute has been revised to forbearance regime within a prescribed range of Re.0.35 per minute to Re.0.65 per minute. Further, to ensure the level playing field between standalone and integrated International Long-Distance Operators (ILDOs), it is mandated that an Access Service Provider shall offer the non-discriminatory rate of ITC to everyone i.e. to its own associated ILDO as well as to standalone ILDOs. These Regulations came into force from 1st May,2020.

- **Telecom Consumers Protection (Eleventh Amendment) Regulations, 2020 dated 30th September 2020**

  The Authority had issued a Consultation Paper on Regulation of International Mobile Roaming Services in May 2020. Pursuant to the consultation exercise comprising of receipt of comments and counter-comments and conducting an online OHD, the Authority issued the 11th Amendment to the TCPR on 30th September 2020 vide which the Authority enhanced the requirements of provision of information relating to various aspects of IMR Services viz., selection of tariff, data usage, availing services not covered under the subscribed tariff etc.

- **Regulations dated 10th July 2020 on "The Telecommunication Interconnection (Second Amendment) Regulations, 2020"**

  TRAI has notified "The Telecommunication Interconnection (Second Amendment) Regulations, 2020" on 10th July, 2020, which makes easier the interconnection between any two Public Switched Telephone Networks (commonly referred to as the Fixed Line Networks), and between Public Switched Telephone Network (PSTN) and National Long Distance (NLD) Network.

  A consultation paper on the "Review of the Regulatory framework for Interconnection" was issued on 30th May 2019 seeking comments and counter-comments from the stakeholders. In this regard, an Open House Discussion (OHD) was held on 19th August 2019 at New Delhi. Based on the comments/inputs received from the stakeholders, discussion held during the OHD and after its own analysis, the Authority has notified "The Telecommunication Interconnection (Second Amendment) Regulations, 2020".

  The synopsis of the amendments to the "Telecommunication Interconnection Regulations, 2018", is as follows: -

  (i) Within a service area, the location of POI, for calls between PSTN and PSTN or between PSTN and NLD network, shall be at such place as may be mutually agreed between the interconnection provider and the interconnection seeker.

(ii) In case the interconnection provider and the interconnection seeker fail to agree, the location of POI, for calls between PSTN and PSTN, or between PSTN and NLD network, shall be at LDCC. In such a case, the carriage charge for carriage of calls from LDCC to SDCC and vice versa, as applicable shall be paid by the interconnection seeker to the interconnection provider.

(iii) The existing POIs at the SDCC level, for calls between PSTN and PSTN, or between PSTN and NLD network, shall remain in operation for a period of at least five years or till such time the interconnected service providers mutually decide to close such POIs, whichever is earlier.

(iv) The existing POI at the SDCC level, for calls between PSTN and PSTN, or between PSTN and NLD network, can be closed if the services of either of the interconnected service providers are discontinued in that SDCA.

6.1.3 Consultation Papers

- **Consultation Paper dated 22nd April 2020 on "Methodology of applying SUC under the weighted average method of SUC assessment, in cases of Spectrum Sharing"**

DoT through its letter dated 15th January 2020, inter-alia, informed that the existing guidelines for Sharing of Access Spectrum by Access Service Providers issued by DoT on 24th September 2015 provides that the SUC rate of each of the licensees post sharing increases by 0.5% of Adjusted Gross Revenue (AGR). DoT also informed that it has received representations requesting that the incremental SUC rate of 0.5% post sharing should be applied only to the particular spectrum band which has been allowed to be shared between two licensees, and not on the entire spectrum held by the licensees, since sharing is permitted in a particular band. In this background, DoT requested TRAI to furnish its recommendations on (i) whether the incremental 0.5% in SUC rate in cases of sharing of spectrum should be applied only on the specific band in which sharing is taking place; or to the overall Weighted Average Rate of SUC, which has been derived from all bands and (ii) any other recommendation deemed fit for the purpose, under TRAI Act 1997, as amended.

In this regard, a Consultation Paper on "Methodology of applying Spectrum Usage Charges (SUC) under the weighted average method of SUC assessment, in cases of Spectrum Sharing" was released on 22nd April 2020 seeking comments/counter comments from the stakeholders on the issues raised in the Consultation Paper.

The consultation process culminated in the recommendations on the subject dated 17th August 2020, which is discussed elsewhere in the Report.

- **Consultation Paper dated 26th May 2020on "Regulation of International Mobile Roaming Services"**

The Authority took cognizance of concerns of potentially abusive tariffs or a general lack of transparency in the communication of tariffs relating to International Mobile Roaming Service (IMR Service) leading to bill shocks. It was decided to review the regulatory framework relating to IMR Service and accordingly a consultation paper focusing on specific causes of bill shocks to consumers while availing the IMR Service and evaluating the need for introducing regulations while reviewing the efficacy of existing regulatory requirements was issued on 26th May 2020.

- **Consultation Paper dated 20th August 2020 on "Enabling Unbundling of Different Layers Through Differential Licensing"**

DoT through its letter dated 8th May 2019, inter alia, informed that the National Digital Communications Policy (NDCP) 2018, under its 'Propel India' mission, envisages one of the strategies as 'Reforming the licensing and regulatory regime to catalyse Investments and Innovation and promote Ease of Doing Business'. Enabling unbundling of different layers (e.g., infrastructure, network, services, and application layer) through differential licensing is one of the action plans for fulfilling the aforementioned strategy. Through the said letter dated 8th May 2019, DoT, inter alia, requested TRAI to furnish recommendations on enabling unbundling of different layers through differential licensing, under the terms of the Telecom Regulatory Authority of India Act, 1997, as amended.

Earlier, TRAI had sought inputs from stakeholders on the broad framework for unbundling of license through a Pre-consultation paper on "Enabling Unbundling of Different Layers Through Differential Licensing" dated 9th December 2019.

Based on the inputs received from the stakeholders on the Pre-Consultation Paper, international practices and internal analysis, a Consultation Paper on "Enabling Unbundling of Different Layers Through Differential Licensing" was released on 20th August 2020.

The Consultation Paper is available in TRAI's website www.trai.gov.in.

- **Consultation Paper dated 20th August 2020 on "Roadmap to Promote Broadband Connectivity and Enhanced Broadband speed"**

TRAI issued the Consultation Paper on "Roadmap to Promote Broadband Connectivity and Enhanced Broadband speed" on 20th August, 2020.

Increasing reliable and high-speed broadband connectivity in the country has been in focus of the Government and the Authority since 2004. Number of policy and regulatory initiatives has been taken in the past to reach the present state. Constant developments happening in the field of ICTs are putting continuous pressure on the Government, the Authority, and the TSPs to further improve the penetration and performance of broadband networks. Efforts are continuing to meet the ever-growing demand and expectations of consumers. Many strategies have been identified in the NDCP-2018 to improve the penetration and performance of broadband networks. Such strategies need to be converted into actionable points.

Further, the Department of Telecommunications (DoT) requested the Authority to furnish its recommendations as per Section 11(1)(a) of TRAI Act 1997, as amended, on the following points:

(a) "Different speeds for different categories i.e. fixed vs Mobile with upload/download speeds defined;

(b) How different categories of broadband speeds such as basic broadband, high broadband & Ultra-High Broadband etc. can be defined as in Europe; and

(c) The roadmap to enhance Broadband speed to achieve the NDCP-2018 objective of 50 Mbps."

DoT, through two other separate references has sought the recommendations of the Authority for implementing NDCP-2018 strategies *"By encouraging innovative approaches to infrastructure creation and access including through resale and Virtual Network Operators (VNO)"* and *"Promoting broadband connectivity through innovative and alternative technologies"*, respectively. Both strategies are part of the mission *"Connect India: Creating a Robust Digital Communication Infrastructure"*.

With this background, the Authority, through this Consultation Paper intends to seek the inputs of stakeholders on (i) defining fixed and mobile broadband, (ii) innovative approaches for infrastructure creation, (iii) promoting broadband connectivity, and (iv) measures to be taken for enhancing broadband speed.

- **Consultation Paper dated 1st September 2020 on "Review of The Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulations, 2006"**

TRAI on 1st September 2020 released a Consultation Paper on "Review of The Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulations, 2006". Accurate metering of the usage of telecom services and minimizing the incidents of billing complaints have always been important issues for TRAI to protect the interests of the customers. In this regard, TRAI had notified the Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulation, 2006, on 21st March 2006. These regulations contain a Code of Practice for Metering and Billing Accuracy, which every Basic Service Provider and Cellular Mobile Service Provider must comply with.

The objective of this consultation Paper is to deliberate upon the guidelines for metering and billing in the changing scenario of the telecom world. The focus of the consumer has shifted from voice to data. Technological solutions have come up which can get the process of audit conducted in more efficient and effective manner. Thus, a need was felt to review The Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulations, 2006. Accordingly, a Consultation paper was floated on "Review of The Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulations, 2006".

6.1.4 Tariff Orders

➢ **Issue of Telecom Tariff (65th Amendment) Order, 2020 dated 3rd June 2020**

After following an elaborate consultation process and online Open House Discussion, the TRAI issued the Telecom Tariff (65th Amendment) Order, 2020 on 3rd June 2020. The Amendment Order provides for deletion of Schedule XIII of the Telecommunication Tariff Order, 1999 which made it obligatory for telecom service providers to charge a minimum of 50 paisa per SMS for every SMS exceeding 100 SMS per SIM per day. The Amendment Order marked another initiative of TRAI in doing away of the tariff regulation and strengthening the regime of tariff forbearance.

Consumer outreach by TRAI

One of the important objectives of TRAI is to create awareness and safeguard consumer interest. Given the importance of reaching out to consumers all over the country, TRAI has a public interface with telecom subscribers through its website, social media platforms such as twitter, Facebook, YouTube channel and through Consumer Outreach Programmes conducted across the country. TRAI also organizes seminars on contemporary technological and consumer related issues. In the current situation of Covid-19, it was decided to conduct such programs via online platform where consumers can join while sitting at their home, shop, or office. TRAI organised four Webinars on topics viz. 5G, IOT and Cyber security in this financial year so far. TRAI also conducted 17 Consumer Outreach Programmes through online mode so far in this financial year wherein large number of telecom consumers, representatives of Consumer Advocacy Groups (CAGs), representatives of Telecom Service Providers, officials of Government and Private Organizations, students from various engineering & management colleges have participated.

6.2 TELECOM DISPUTES SETTLEMENT & APPELLATE TRIBUNAL

The Telecom Regulatory Authority of India (TRAI) Act, 1997 (as amended) provides for the establishment of the TRAI and the Telecom Disputes Settlement and Appellate Tribunal (TDSAT) to regulate the telecommunication services, adjudicate disputes, dispose off appeals and to protect the interests of service providers and consumers of the Telecom, Broadcasting & Cable sector and to promote and ensure orderly growth of the Telecom, Broadcasting & Cable sectors and for matters connected therewith or incidental thereto.

The TDSAT was created in the year 2000 by the Central Government under the TRAI Act, 1997 (as amended) to settle and adjudicate disputes involving licensor, licensee, and a group of consumers. In January, 2004 the jurisdiction of TDSAT was extended to include broadcasting and cable services besides telecommunication services. In May, 2017 the jurisdiction of TDSAT was further extended to include erstwhile jurisdiction of Airport Economic Regulatory Authority Appellate Tribunal (AERAAT) and Cyber Appellate Tribunal (CyAT).

The jurisdiction of TDSAT is exclusive and an appeal against its order lies to the Hon'ble Supreme Court of India on points of law only. However, under the provisions of IT Act, appeal against order of TDSAT on cyber matters lies before High Court. Statutory appeal does not lie against the interim

order of TDSAT. TDSAT exercises both original as well as appellate jurisdiction. TDSAT is an expert body and comprises of a Chairperson and two Members.

In telecom sector various types of matters relating to interconnection, inter-operator billing disputes, customer application form (CAF), certain policy and regulatory actions failing to address legitimate expectations of stakeholders, recovery of outstanding dues of stakeholders, licensing disputes including disputes on computation of Adjusted Gross Revenue (AGR) and allocation of spectrum, disputes on access deficit charge (ADC) etc., can be filed in TDSAT.

In broadcasting and Cable sector, cases relating to signal disconnection/ refusal/denial, pricing of channels/ bouquets, non-payment/ recovery of subscription/carriage charges, piracy of signals/ illegal transmission of signals, licensing disputes, disputes arising out of tariff order of the TRAI etc., can be filed before TDSAT.

The number of cases in the Tribunal has been increasing every year since its establishment in May, 2000. The total number of cases filed before TDSAT in the 2001 were 105 (including Petition/ Appeal/ E.A./R.A.), which increased to 831 cases in 2019 (Excluding M.A.) In the year 2020 till 30.11.2020, 824 cases (excluding M.A.) have been filed. The disposal of cases has kept pace with the filing and all efforts are made to ensure that there is speedy disposal. A statement of cases filed, disposed off and pending since 2001 till 30th November, 2020 is at Table 6.1.

TDSAT has been organizing seminars from time to time, in different parts of the country to bring public awareness amongst various stakeholders including consumers, about the dispute redressal mechanism in the Telecom, Broadcasting and Cable Sectors and to find ways and means to strengthen the grievance redressal system in these sectors. TDSAT has so far organized 50 such seminars. The distinguished speakers including Hon'ble Judges of the Supreme Court, during various seminars organized by TDSAT, have commended the delivery system of TDSAT.

As sector Member of International Telecommunication Union (ITU), TDSAT has been participating in the international seminars, conferences and events organized by ITU and other international bodies. Officers/ Officials of TDSAT from time to time, are being deputed to participate in Training programmes organized by the National Productivity Council (NPC).

TDSAT maintains its own website with all judgments and other activities of the Tribunal uploaded on it at www.tdsat.gov.in.

TDSAT has also set up a Mediation Centre to help litigants to go through a mediation process and arrive at a mutually agreed settlement of disputes with the help of trained mediator. The Mediation Centre has started functioning from 29.07.2013 and has been successful in helping settle large number of cases so far. As on 30.11.2020 a total number of 507 cases have been referred to Mediation Centre. Out of this, a total number of 190 cases have been settled and 311 numbers of cases were referred back to the Tribunal unsettled. The remaining 6 cases are currently under mediation.

The TDSAT has also set up a Registrars' Court which has started functioning w.e.f. 22.7.2013 for completion of pleadings, framing of issues and taking up evidence etc. to speed up the disposal of cases before TDSAT.

Table 6.1

STATEMENT OF INSTITUTION, DISPOSAL AND PENDENCY OF CASES AS ON 30/11/2020 10:39:18

S.No	Description	INSTITUTION																					DISPOSAL																					Pendency
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL	
1	Petition B.P. T.P. Total	0 24 24	0 20 20	0 20 20	36 20 56	125 30 155	308 20 328	307 26 333	251 20 271	269 15 284	364 73 437	311 212 523	595 386 981	321 158 479	430 115 545	586 121 707	727 102 829	577 140 717	642 251 893	462 99 561	717 77 794	7028 1929 8957	0 24 24	0 20 20	0 20 20	36 20 56	125 30 155	308 20 328	307 26 333	251 20 271	269 15 284	364 73 437	311 212 523	592 371 963	302 132 434	362 65 427	424 43 467	278 34 312	280 35 315	277 150 427	133 24 157	37 5 42	4656 1339 5995	2372 590 2962
2	Review Application	0	1	2	2	3	7	17	5	9	11	14	19	9	11	2	9	22	3	12	4	**162**	0	1	2	2	3	7	17	5	9	11	14	19	9	11	2	9	22	3	11	2	**159**	**3**
	Appeal																																												
	B.A.	0	0	0	3	2	10	11	5	1	11	0	11	15	7	5	2	5	4	3	3	98	0	0	0	3	2	10	11	5	1	11	0	11	15	7	5	0	5	4	2	2	94	4
3	T.A. A.A.	12 0	15 0	32 0	2 0	10 0	8 0	4 0	6 0	8 0	0 5	2 14	11 12	4 15	0 3	0 0	1 9	4 2	5 8	0 4	1 2	125 74	12 0	15 0	32 0	2 0	10 0	8 0	4 0	6 0	8 0	0 5	2 14	11 11	4 14	0 0	0 0	1 2	4 0	5 3	0 1	0 0	124 50	0 24
	C.A.	0	0	0	0	0	0	1	0	8	6	11	4	10	8	34	3	1	23	34	11	154	0	0	0	0	0	0	1	0	8	6	11	3	7	5	6	1	1	6	8	0	63	91
	Total	**12**	**15**	**32**	**5**	**12**	**18**	**16**	**11**	**17**	**22**	**27**	**38**	**44**	**18**	**39**	**15**	**12**	**40**	**41**	**17**	**451**	**12**	**15**	**32**	**5**	**12**	**18**	**16**	**11**	**17**	**22**	**27**	**36**	**40**	**12**	**11**	**4**	**10**	**18**	**11**	**2**	**331**	**120**
4	Received on Transfer fromTrai	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
5	Received on Transfer from High Court	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	13	0
6	On Remand from SC	5	1	1	0	2	3	10	6	7	1	0	0	0	0	0	0	0	0	0	0	**36**	5	1	1	0	2	3	10	6	7	1	0	0	0	0	0	0	0	0	0	0	**36**	**0**
7	Executition Applicaton	0	0	0	7	2	18	27	4	10	36	24	46	15	27	13	30	15	13	21	9	**317**	0	0	0	7	2	18	27	4	10	36	24	46	15	23	12	29	5	12	2	0	**272**	45
	Total	57	37	55	70	174	374	403	297	327	507	588	1084	560	601	761	883	766	949	635	824	9952	57	37	55	70	174	374	403	297	327	507	588	1064	511	473	492	354	352	460	181	46	6822	3130
8	Misc Application	0	0	0	0	0	0	0	0	0	0	0	1	4	10	22	82	33	28	16	7	**203**	0	0	0	0	0	0	0	0	0	0	0	1	4	9	20	80	32	27	12	3	**188**	**15**
	Grand Total	**57**	**37**	**55**	**70**	**174**	**374**	**403**	**297**	**327**	**507**	**588**	**1085**	**564**	**611**	**783**	**965**	**799**	**977**	**651**	**831**	**10155**	**57**	**37**	**55**	**70**	**174**	**374**	**403**	**297**	**327**	**507**	**588**	**1065**	**515**	**482**	**512**	**434**	**384**	**487**	**193**	**49**	**7010**	**3145**

CHAPTER 7

Administration, Training and Swachh Bharat

7.1 RIGHT TO INFORMATION

A separate RTI unit has been established in the Department and is functional since 1st January, 2007. RTI Unit of the Department is functioning under the supervision of Deputy Secretary and Nodal Officer (RTI). To facilitate the quick disposal of RTI applications/appeals, 102 officers have been designated as CPIOs and 32 officers have been designated as First Appellate Authorities in the Department.

RTI Applications data from 01.04.2020 to 31.12.2020 are as under:

(i)	Total online RTI applications received during the year	– 2755
(ii)	Total online RTI appeals received	– 220
(iii)	Total offline RTI applications received during the year	– 374
(iv)	Total offline RTI appeal received during the year	– 14
(v)	Total RTI fee received for offline application	– ₹1800

7.2 PUBLIC GRIEVANCE

7.2.1 Function & Role:

The function and roles assigned to Public Grievance (PG) Wing of Department of Telecommunications (DoT) includes:

i) Handling of Public Grievances through Centralized Public Grievance Redressal and Monitoring System (CPGRAMS).

(ii) Management of Telecom Consumer Grievance Helpline (Short Code-1063)

(iii) Dealing with complaints registered on telephone in the Call Centre

(iv) Physical receipt of public complaints/grievances

(v) Citizen's Charter for DoT

(vi) Parliament Questions, fulfilment of Assurances, Court Cases, RTI Matters, audit paras and administrative matters related to PG Cell

(vii) Handling of VIP references

(viii) Create awareness amongst the stakeholders, organize workshop/training and inspect subordinate office for better resolution of customer grievances

(ix) Coordinate with other Ministries/ Departments related to PG

(x) Arbitration matters

7.2.2 Grievance Redressal Mechanism in Telecom Sector:

(i) The primary responsibility of addressing the service related, billing, quality of service grievances lies with telecom service provider, which emanates from licensing terms and conditions. As per licensing conditions

"Any dispute, with regard to the provision of service shall be a matter only between the aggrieved party and the Licensee, who shall duly notify this to all before providing the service. And in no case the Licensor shall bear any liability or responsibility in the matter. The Licensee shall keep the Licensor indemnified for all claims, cost, charges or damages in the matter."

(ii) TRAI has issued "Telecom Complaint Redressal Regulations 2012" (available on TRAI website) to streamline the process of grievance redressal mechanism by the service providers. The regulation provides for setting up of two-tier grievance redressal mechanism by all Telecom Service Providers as per following details:

a) Establishment of a Complaint Centre with a toll-free "Customer Care Number". The Complaint Centre will be responsible to address all the complaints received by them. Provisions have also to be made such that Customer Care Number of TSPs could be accessed from any other service provider's network. Every complaint at the Complaint Center shall be registered by giving a unique docket number.

b) Establishment of an Appellate Authority: Every service provider shall appoint appellate authorities consisting one or more persons to deal with grievances. If a consumer is not satisfied with the redressal of his complaint, or his complaint remains unaddressed or no intimation of redressal of the complaint is received within the specified period, he can approach the Appellate Authority for redressal of his complaints within 30 days. Every service provider shall constitute a two-member Advisory Committee in each of the service areas to advise on all such appeals to the Appellate Authority. The Appellate authorities shall dispose of the grievance, by taking recommendations of the advisory committee into consideration, within 39 days of receipt of the grievance.

Thus, the responsibility of redressal of grievances in the telecom sector lies with the concerned Telecom Service providers (TSPs)/ Internet service providers (ISPs), organizations/ subordinate units / PSUs / administrative sections of the Department of Telecommunications (DoT). A complainant may approach to PG wing of Department of Telecommunications (DoT) after exhausting the channels of redressal of grievance at concerned Organization / Service Provider level.

However, Public Grievance (PG) Wing of DoT, without prejudice to the right of a complainant to approach an appropriate court of law, acts as a facilitator for resolution of grievances so received. PG

wing of DoT acts as next higher level in the grievance redressal mechanism. PG wing attempts to resolve the grievance by coordinating with all the concerned stake holders including TSPs/ISPs, and other concerned agencies in time bound manner to the satisfaction of the complainants.

7.2.3 Centralized Public Grievance Redress and Monitoring System (CPGRAMS)

i) CPGRAMS is the platform based on web technology which primarily aims to enable submission of grievances by the aggrieved citizens from anywhere and anytime (24x7) basis to Ministries/ Departments/Organizations who scrutinize and take action for speedy and satisfactory redressal of these grievances. Tracking grievances is also facilitated on this portal through the system generated unique registration number.

ii) Department of Telecommunications (DoT) is processing grievances registered by citizens in the CPGRAMS Portal which includes complaints received in Department of Administrative Reforms & Public Grievance (DARPG), Directorate of Public Grievances (DPG), Department of Pension & Pensioner's Welfare (DoPPW), President's Secretariat and Prime Minister's Office in the system and accessible at the website www.pgportal.gov.in. DoT wings, DoT LSAs, DoT PSUs, TSPs, ISPs etc. have been created as subordinate organizations for online handling of grievances.

iii) Grievances received in the PG wing in offline mode are also uploaded on the CPGRAMS Portal for online monitoring and tracking.

iv) The details in respect of complaints handled for the year 2020-21 (from 01.04.2020 to 31.12.2020) are given as under: -

Opening Balance as on 1st April, 2020	No. of grievances booked during 1st April, 2020 to 31st December, 2020	Total	No. of grievances disposed of during 1st April, 2020 to 31st December, 2020	Pending grievances as on 31st December 2020
3743	70967	74710	72066	2644

7.2.4 Efforts taken for faster disposal of Public Grievances/ VIP cases:

Regular review meetings are conducted by PG wing with Nodal officers of TSPs and concerned DoT units in order to ensure early disposal of pending grievances/ VIP cases. In these meetings, the issues related to categorization of complaints, the disposal mechanism, quality of disposal, systemic issues etc. are deliberated and resolved. PG wing also provides the necessary support and handholding to the concerned agency in handling and disposal of the grievances/references. PG wing is also focusing on ensuring a robust grievance redressal mechanism in TSPs as per TRAI regulations.

PG Wing has adopted a mechanism of continuous persuasion by way of requesting the concerned Units (TSPs/ISPs/ DoT Units) to dispose of pending cases. Letters, emails and telephonic reminders are issued by different levels in PG wing to the Nodal and higher officers of TSPs/ISPs and DoT unit at regular intervals. PG Wing has taken up the task of deep category-wise analysis of pending cases in order to help the concerned units/TSPs /ISPs/Divisions for faster disposal of pending cases.

7.3 CITIZEN CHARTER

A Citizen Charter is a document which represents the commitment of the Organization towards standard, quality and time frame of service delivery, grievance redressal mechanism, transparency and accountability. The concept of Citizen Charter enshrines the trust between the Government as service provider and its general public as customers.

Though not enforceable in a court of law, the Citizen Charter is intended to empower citizens so that they can demand committed standards of service and avail remedies in case of non-compliance by service provider organizations. The basic thrust of the Citizen Charter is to render citizen-centric public services by making them demand driven rather than supply driven.

DoT, with vision to provide secure, reliable, affordable and high quality converged telecommunications services anytime, anywhere for an accelerated and inclusive socio-economic development, has formulated its Citizen Charter listing main services/transactions being delivered by DoT for its customers.

PG wing being nodal unit for citizen charter, coordinate with other wings of DoT to get the services documented along with associated process, which include details of documents required, applicable fees, if any, along with its mode of payment for availing each of the services. The Charter also specifies the standards of services delivery, the contact details of the units/agencies/centers responsible for delivery of these services, performance evaluation criteria in respect of delivered services, grievance redressal mechanism etc.

7.4 TRAINING & CAPACITY BUILDING

The Training & Capacity Building Division is entrusted with the work of deputation of telecom officers for domestic & long term trainings, coordination for training activities with DoPT and coordination for training activities of National Telecommunications Institute for Policy Research, Innovations & Training (NTIPRIT), development of cadre training Plan including Mid-Career Training Program, In-service courses and customized training programs for telecom officers. The Division is also taking steps for several training and knowledge sharing initiatives such as identifying and developing pool of certified trainers on topics of interest from available pool of officers in DoT and knowledge management & sharing through workshops. The Division is also contributing towards building synergy in the field of capacity building among various field units of DoT, PSUs/departments under DoT such as NTIPRIT, ALTTC, TEC, C-DOT, TCIL etc. by encouraging pooling of resources.

With the above objectives in mind and keeping in view the directions provided in the National Training Policy 2012, the Training & Capacity Building Division undertook several important activities in the year 2020-21 despite severe limitations caused as a result of Covid-19 pandemic as various proposed classroom trainings/workshops were postponed or cancelled during this year. In all, 9 officers of the cadre were deputed to 3 long term Training programs at IIM Bangalore, IIPA New Delhi, MDI Gurgaon. In

addition to above, 12 officers were deputed for short term trainings during the year in multiple areas such as Cyber Surakshit Bharat (Cyber Security) Training conducted by MeitY, Fundamental of Digital Marketing using Social Media Platforms, etc.

Training Division, in coordination with GSMA conducted 22 online trainings on latest ICT technologies such as 5G, Big Data Analysis, Spectrum Management, Principles of Mobile Privacy, leveraging mobile technologies to achieve SDC Targets, etc. 216 officers of DoT had participated in these trainings.

Mid Career Training Program (MCTP) for ITS officers was started from July 2019. 6 Batches of Technical component of MCTP has been conducted so far, and in respect of "Administrative and Managerial component" of MCTP, approval of competent authority was obtained and RFP has been approved for conduction of Administrative and Managerial component. This component of MCTP is also expected to commence in the year 2021.

As a part of India-Japan Joint Working Group (JWC) on ICT framework, DoT in collaboration with Ministry of Internal Affairs and Communications, Government of Japan organized 3rd CYDER (Cyber Defence Exercise with Recurrence) training program. This training programme was conducted by Training Division in coordination with TEC and NEC, Japan for enhancing the abilities of system administrators in government agencies to effectively handle the increasing threat of cyber-attacks. 32 officers/officials of DoT, MeitY, MHA were trained in the program.

7.4.1 Skill Development Activities

'Pandit Deendayal Upadhyaya Telecom Skill Excellence Awards'

To motivate the Telecom Skill ecosystem, DoT launched this award scheme in 2017, to reward the successful telecom skilled people for their special contributions in the areas of Telecom Skilling, Telecom Services, Telecom Manufacturing, Telecom Applications in deploying telecom dependent sectoral solutions for different fields such as agriculture, commerce, health, education etc. The award was named after Pandit Deendayal Upadhyay ji to commemorate his birth centenary. The first award was called for year 2018.

Hon'ble Minister of Communications, Shri Ravi Shankar Prasad and Hon'ble Minister of State for Communications, Shri. Sanjay Shamrao Dhotre presented the awards.

7.4.2 National Telecommunications Institute for Policy Research, Innovations & Training (NTIPRIT)

The Department of Telecommunications established the National Telecommunications Academy (NTA) in the year 2010 as the technical training institute of the Department. Subsequently, in year 2011, the mandate of institute was expanded by bringing into the activities related to Policy Research and Innovations under its ambit and the institute was rechristened as National Telecommunications Institute for Policy Research, Innovations & Training (NTIPRIT). Since then NTIPRIT has grown from strength to strength and the institute is now a Central Training Institute (CTI) enlisted with Department of Personnel & Training. NTIPRIT is presently operating from the campus of Advanced Level Telecom Training Centre (ALTTC) at Ghaziabad.

7.4.2.1 Summary of Training activities in Year 2020-21:

In the wake of Covid-19 situations and various guidelines issued by MHA and local authorities from time to time on the matter, no face to face training have been scheduled at the training centre, NTIPRIT till December, 2020. Instead various Trainings/ Induction Training/ Attachments /Capacity building programs etc. have been conducted for Trainees in Online mode. NTIPRIT has conducted Induction training programs for ITS, BWS & JTO probationers, Capacity building programs for In-Service officers of DoT, Promotion linked mandatory training for Group 'B' officers and courses for international participants under the aegis of Asian Pacific Tele-Community programs in the year 2020-21.

- Two (2) International courses- "ICT in Disaster Management" and "ICT Policy & Regulation" - for foreign participants under the APT program have been scheduled in F.Y. 2020-21. One week course on "ICT in Disaster Management" was conducted in November, 2020 in virtual mode,

attended by 17 participants from 9 different countries. Theone-week course on "ICT Policy & Regulation" was conducted in December, 2020, attended by 18 participants from 8 Countries.

- ❖ Officer Trainees ITS 2018, 2019 attended Induction training in F.Y. 2020-21.
- ❖ Officer Trainees of P&T BWS 2017 batch attended Induction training in F.Y. 2020-21.
- ❖ The induction training of JTO 2018 batch was completed in F.Y. 2020-21.
- ❖ A new batch of ITS-2019 [8 trainees] joined NTIPRIT for induction training in October 2020.
- ❖ A new batch of JTO-2018 (RL) & 2019 [16 trainees] joined NTIPRIT for induction training in December 2020.
- ❖ Promotion linked mandatory training for all the eligible Group B officers from JTO-2016 and JTO-2018 batch has been conducted.
- ❖ 24 Webinars/ In-Service courses till December, 2020 have been conducted and 1150 officers attended these courses.

7.4.2.2 Induction Trainings

ITS and P&T BWS Induction Trainings

i) Joining of ITS-2019 batch and Interaction of Officer Trainees

A new batch of 8 Officer Trainees of ITS 2019 batch joined NTIPRIT through various field units on 12.10.2020. The officer trainees interacted virtually with DG (Telecom) present in virtual interaction session.

ITS-2019 batch virtually interacting with DG(Telecom)

ii) Foundation Course

Fifteen Week Foundation course is a part of Induction Training of ITS cadre trainees. Foundation course for ITS 2018 and ITS 2019 batches commenced from 23.11.2020. This Foundation course of 15 weeks is in tune with the Foundation course for other All India Service Officer Trainees. NTIPRIT entered into an MoU with Haryana Institute of Public Administration (HIPA), Gurugram for organizing this course and accordingly the Officer Trainees were deputed to attend 15 weeks Foundation Course at HIPA, Gurugram.

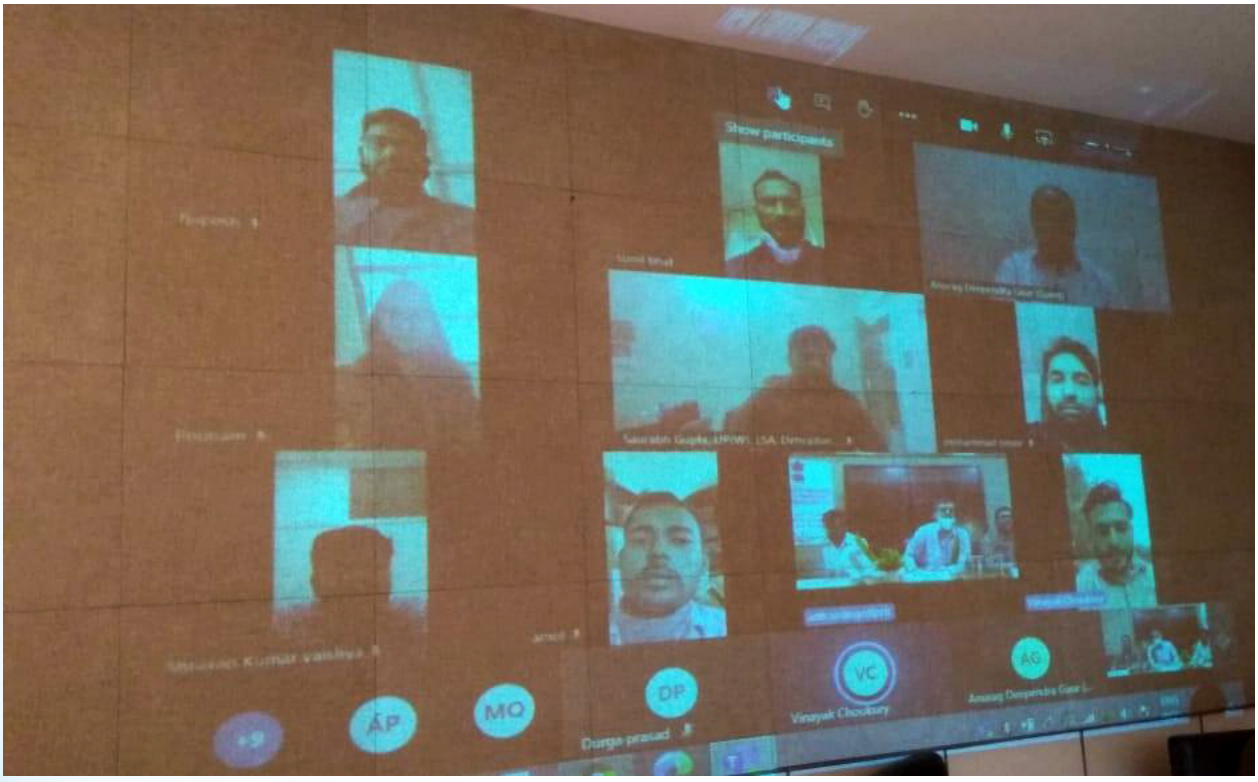
iii) Induction training of P& T BWS (Civil)-2017 batch:

This year, NTIPRIT has completed field attachment training for P&T BWS-2017 batch. The remaining modules for this batch are being conducted from 1st December, 2020.

JTO Induction Trainings

(i) Completion of Induction Training of JTO-2018 batch: A 30 weeks induction training for JTO-2018 batch was completed in FY 2020-21. JTO-2018 batch Probationers were motivated and blessed by senior officers of NTIPRIT during valedictory module held in Online Mode.

(ii) Induction training for newly recruited officers of JTO-2018 (RL) &2019 batch, commenced on 01.12.2020 at NTIPRIT in On-Line mode.



Online Induction Training of JTO-2018(RL) & JTO-2019 batch.

7.4.2.3 Important Seminars/ In Service Courses:

Summary of Seminar/ In-Service Courses conducted by NTIPRIT till December 2020 is as below:

Sr. No.	Name of Course/ Webinar	Period of course	No. of Participants
1	Introduction to Block chain Technology	20.04.2020	20
2	Policy Research: An Overview	27.04.2020	20
3	Prevention of Corruption Act	11.05.2020	40
4	Disaster Management Technologies	13.05.2020	34
5	Policy Research: An Overview (2nd Batch)	15.05.2020	44
6	Internet of Things: An Introduction	18.05,2020	40
7	Application of Big Data Analytics in Telecom	20.05.2020	66
8	5G Introduction: Standardization and Technical Requirements	22.05.2020	56
9	Introduction to Block chain	26.05.2020	59
10	5G Architecture and Features	28.05.2020	53
11	NGN Concept	15.06.2020	21
12	Digital Health: Telecom Perspective	22.06.2020	26
13	Happiness and Competency	25.06.2020	31
14	Right to Information Act	29.06.2020	30
15	PMRTS	30.06.2020	10
16	Basics of Python (10 days online course)	29.06.2020 to 10.07.2020	25
17	Webinars on BUMS for DG (T) office and LSA units-I	17.09.2020	25
18	Webinars on BUMS for DG (T) office and LSA units-II	21.09.2020	27
19	Data Privacy and Data Protection in Telecom Domain	20.10.2020	70
20	Overview of 5G network architecture and RF interface	26.10.2020	170
21	5G Applications and 5G Spectrum Industry perspective	27.10.2020	70
22	Network Function Virtualization and cloud native infrastructure for 5G	28.10.2020	90
23	Cyber Security for Executives (FDP)	21.12.2020	22
24	Awareness on ISMS standard (ISO-27000) and Auditing in Telecom Domain	23.12.2020	101
Total			**1150**

7.4.2.4 JTO to AD promotion linked Mandatory Training Program:

The Mandatory JTO to AD Up-gradation Course linked to promotion of JTOs was conducted from 19th October 2020 to 30th October 2020 and has been completed successfully by total 9 participants in Online mode.

International Courses (APT)

Two APT training courses have been scheduled in the year 2020-21 for International participants under the aegis of Asia- Pacific Tele-community. The details are as follows:

ICT in Disaster Management (02.11.2020 to 06.11.2020)

One-week APT course on 'ICT in Disaster Management' was conducted by NTIPRIT in Online Mode. Total 17 participants from 9 countries participated in this course. The implementation & usage aspects of various ICT Technologies in Disaster management were discussed during the course. The participants were also given the exposure of rescue management during disaster.

Welcome session of APT course in "ICT in Disaster Management course"

ICT Policy & Regulation (14.12.2020-18.12.2020)

One-week APT course on 'ICT Policy & Regulation' was conducted by NTIPRIT in Online Mode. Total 18 participants from 8 countries participated in this course. The course was aimed at familiarizing the participants with the basic concepts of Policy & Regulations and to develop understanding of spectrum management and key principles. The participants were also made to understand new ICT trends, their effect on business, market and society and institutional structure of Telecommunication sector.

Valedictory session of APT course in "ICT Policy & Regulation"

Overall summary of APT courses is as follows:

Sl. No.	Name of Course	Period	No of Participating Countries	No of participants
1.	ICT in Disaster Management	02.11.2020 to 06.11.2020	09	17
2.	ICT Policy & Regulations	14.12.2020 to 18.12.2020	08	18
Total				**35**

Overall Summary of Training Courses Conducted by NTIPRIT in year 2020-21 (Till December 2020):

Apart from class room training, induction training also includes attachment to various units of DoT in online mode and Foundation Course training at HIPA Gurugram

S. No.	Type of Courses	Cumulative (from April 2020 to December 2020)		
		No. of Courses	No. of Trainees	Trainee Days
1.	Induction Course for ITS Group - A Officers	2	24	**3205**
2.	Induction Course for BWS Group - A Officers	1	2	**254**
3.	Induction Course for JTO Group - B Officers	2	27	**880**
4.	In-Service training for DoT officers	24	1150	**1375**
5.	APT Course	2	35	**175**
6.	JTO to AD Mandatory Training Program	1	09	**81**
	Total	32	1247	5970

Training Courses likely to be conducted from January 2021 to March 2021:

Sl. No.	Type of Courses	Likely no of courses to be conducted	Likely no of persons to be trained	Likely no of Trainee-days
1.	Induction training of ITS & BWS Group-A Officers	3	26	1540
2.	Induction Training of JTOs Group-B Officers	1	16	960
3.	In-service course/ Webinar for Officer of DoT	12	480	480
Total		16	522	**2980**

Apart from class room training, induction training also includes attachment to various units of DoT, Foundation Course etc.

7.4.2.5 Policy Research:

NTIPRIT undertook following Policy Research initiatives during FY 2020-21:

(1) A Policy Research group on Wi-Fi constituted by NTIPRIT has suggested a unique centralized architecture for Wi-Fi proliferation (CAWP), which will facilitate large scale proliferation of WiFi, especially in Rural areas.

(2) A Policy Research group was constituted at NTIPRIT for suggesting various technological options for connecting villages to Gram Panchayats. Recommendations of the Policy Research group was presented to DoT HQ.

(3) Following study papers were submitted to DoT HQ:

i. Mobile Device Regulation: International perspective

ii. Telecom Cyber Range

(4) The study paper on 'Cyber Security Competency Scenario in India' was submitted to NSCS.

7.4.2.6 Innovation:

NTIPRIT undertook following Innovative projects in this domain during FY 2020-21:

(i) Corona Quarantine Alert System (CQAS): This is an automated alert system which aims to ensure that people who have been advised by Govt. authorities for self isolation (quarantine) are following it scrupulously, minimizing the efforts of State Govt. officials limited to monitoring by exception i.e. only to those persons for whom system generates alarm for crossing their GEO FENCED BOUNDARIES.

(ii) Bulk Migrant Tracking System (BMTS): This system provided the list of mobile numbers of migrants from different States / Metros of the country reaching to a particular state, along with

their approximate current location area. This information was helpful for the State Govt. in identifying and reaching out to probable Corona carriers migrated to different districts of the state during Lock down period and effectively making them quarantine.

(iii) **NTIPRIT** developed an application for automated testing of URLs ordered for blocking by Government of India, especially those pertaining to mobile apps found to be violating the provisions under section 69A of the IT act and also improved as per feedback of field units. Key features of this application are:

a. Automated testing of URLs from an excel file as input

b. Manual testing of any URL for compliance check

c. Automated testing of URLs against DNS list as populated in configuration

d. Capture all IP addresses resoled by different DNS servers for URLs to facilitate identification and subsequent blocking of all IPs associated with a blocked URL

e. Automated testing of availability of blocked Apps in Android and iOS play store; any other play store site can also be checked.

f. Availability of results in excel file for ease of further processing. Results include relevant IETF technical response codes to facilitate further technical analysis.

g. Hash is generated for each output excel file to facilitate validation of its integrity.

(iv) Webinar on Blocked URLs Management System for DGT and LSA officers was also conducted by NTIPRIT.

7.4.3. National Institute Of Communication Finance (NICF)

1. During the year 2020-21 due to COVID-19, induction training for probationers was carried out online for 2018-19 Batch IP&T AFS Officer Trainees (OTs) on the Administration and Management Module, Telecom Module and Postal Module. In addition, the OTs were given opportunity to prepare and give presentation on emerging areas of Telecom sector and other areas. Varied topics were assigned to OTs to write articles on relevant subjects of professional interest. OTs were encouraged to contribute to NICF in-house magazine 'Newsletter'.

2. NICF has proposed to conduct online MCT for IP&TAFS officers at NICF Campus, Ghitorni, New Delhi.

3. Online Induction Training of newly appointed AAOs (in batches) is being conducted at NICF, Ghitorni, New Delhi.

4. Workshops on various relevant issues such as PFMS, GeM, RTI, Digital payments, budget, TDS and filing of return, redefining the role & scope of IA in DoT etc, were also conducted.

5. Celebration of Vigilance Awareness Week during 27.10.2020 to 02.11.2020.

6. Celebration of Constitution day on 26.11.2020.

7. NICF has tried to encourage officers to take up work of analytical research and writing of articles on various emerging areas in Telecom & Postal Sector.

8. NICF has conducted a high level workshop and panel discussion of **"How to make India 5G enabled with the officers of DoT, Academia and TEC etc."** from 26.11.2020 to 27.11.2020.

7.5 STAFF WELFARE AND SPORTS

The Welfare Cell under General Administration Branch undertakes various activities for the welfare of staff which *inter alia* include grant of Scholarship, Book Award and financial incentives to the meritorious school / college going children of the employees. Besides this, conveyance allowance / hostel subsidy is also granted to the differently abled children of the employees. Ex-Gratia financial assistance is also to the employees and their family in distress. In order to encourage the spirit of adventure and foster brotherhood amongst the employees, Welfare Cell also organizes excursion / recreation tours for which subsidy is provided from the Welfare Fund.

During January, 2020 to December, 2020 the following activities were undertaken:

i) An amount of Rs. 45,093/- (Rupees Forty-Five Thousand & Ninety-Three Only) was spent on the celebration of **"International Women's Day"** in the month of March 2020.

ii) An amount of approximately Rs. 1,92,684/- (Rupees One Lakh Ninety-Two Thousand Six Hundred & Eighty-Four Only) was spent on the **"Monthly Farewell Function"** of the DoT Officials retiring from the DoT (Hqrs).

7.6 SWACHHATA MISSION

Swachhta Pakhwada: A Swachhta Pakhwada was observed in the Department during the period from 16th to 30th November, 2020 as directed by Cabinet Secretariat. The Department of Telecommunications drew up an Action Plan for observing Swachhta Pakhwada in a befitting manner and for focused attention towards the cleanliness. The activities started with administering of Swachhta Pledge. Due to ongoing pandemic of COVID-19, mass gathering was avoided and Wing/Divisional Heads were requested to administer Swachhta Pledge to officers/staff posted in respective Wing/Division. The activities chosen, inter-alia included special cleanliness drive in the office building premises and its surrounding area. During the Pakhwada period accumulated unserviceable equipment/ waste/ scrape lying in the basement of office building was removed/sold through tender. Emphasis was also given on segregating the dry and wet waste at source. For this purpose, separate dustbins have been placed on each floor for collection of plastic wastes.

Swachhta Pledge administered to officers /staff posted in the department

Cleaning being done in and outside premises of Sanchar Bhawan

7.7 EMPOWERMENT OF WOMEN

In accordance with the strategic approach of the Government to achieve the goals of gender mainstreaming and gender justice laid down in the National Policy for Empowerment of Women, certain steps have been taken by Department of Telecommunications.

The Department of Telecommunications is effectively implementing the guidelines/instructions of the Supreme Court on prevention of sexual harassment of women at work place in all its units. In pursuance of the orders of the apex court, it has set up a committee on the sexual harassment of women headed by a lady officer.

7.8 OFFICIAL LANGUAGE

Composition: The Official Language Division is under the overall administrative control of Deputy Director General (Coordination & Administration).

Activities: During the period 2020-21 (April, 2020 to December, 2020), following work relating to the progressive use of Hindi were undertaken by the Official Language Division: -

Implementation of the official language policy and the annual programme of the Govt. of India: All Sections, attached and subordinate offices and Public Sector Undertakings under the administrative control of the Department were advised to comply with the provisions of the Official Language Act, Rules and instructions issued there under for achieving the targets fixed by the Ministry of Home Affairs, Department of Official Language, in their Annual Programme for the year 2020-21. Various check-points were also devised for the effective implementation of the Official Language Policy of the Union in this regard. Quarterly Progress Reports regarding progressive use of Hindi in the Department, its attached and subordinate units and the Public Sector Undertakings under its administrative control were reviewed and necessary instructions issued for taking corrective measures. Section 3(3) of the Official Languages Act, 1963 was complied with during the period under review.

Hindi Salahakar Samiti (Hindi Advisory Committee): In pursuance of the guidelines issued by the Ministry of Home Affairs, Department of Official Language from time to time, there is a Hindi Salahakar Samiti of the Ministry of Communications, Department of Telecommunications. Consequent upon the expiry of its tenure of three years on 14th September, 2018, reconstitution of the Hindi Salahakar Samiti of the Ministry of Communications, Department of Telecommunications is in process. As prescribed, functions of the Samiti will be, as before, to render advice to the Government in regard to the implementation of the provisions relating to official language contained in the Constitution, Official Languages Act and Rules framed thereunder, decisions of the Kendriya Hindi Samiti, implementation of the instructions issued by the Department of Official Language to improve and strengthen progressive use of Hindi in the Department of Telecommunications and its attached and subordinate offices as well as undertakings. During the last tenure of three years of the committee, its two meetings were held on 27.08.2016 and 29.05.2018 in Bengalore and Raipur (Chhattisgarh) respectively under the chairmanship of the then Hon'ble Minister of State of Communications (Independent Charge).

Monitoring and inspection: The Official Language Division acts as a co-ordinator in the event of official language inspections of the various offices/undertakings/organizations under the control of Ministry of Communications, Department of Telecommunications, conducted by the Second Sub Committee of the Committee of Parliament on Official Language (CPOL). In these inspections, the Ministry/Department is represented by a Joint Secretary level officer {(Deputy Director General (Administration and Coordination)} and representative(s) of the Official Language Division.

Official language inspections of offices located in Delhi and outside Delhi : In order to assess the status of the implementation of the official language policy, it is mandatory for the Ministry/Department to conduct official language inspections of at least 25% of its undertakings/offices/units etc., as per targets prescribed by the Ministry of Home Affairs, Department of Official Language, in their Annual Programme 2020-21. During inspections of this Department and offices under its control, the Second Sub-committee of the Committee of Parliament on Official Language (CPOL), also emphasises the mandatory requirement of official language inspections by the Ministry/Department of the offices/ undertakings under its control, as per the targets fixed by the Department of Official Language.

However, during the period, April, 2020 to December, 2020, no official language inspections of the subordinate offices located in Delhi or outside Delhi, could be carried out due to Covid-19 pandemic.

Training in Hindi language, Hindi stenography and Hindi typewriting: Official Language Division also processes nominations of officials for various training courses conducted under Hindi Teaching Scheme by the Central Hindi Training Institute, Department of Official Language, Ministry of Home Affairs. However, no officials could be nominated for the courses due to Covid-19 pandemic.

Meeting of the Official Language Implementation Committee: Quarterly meetings of the Official Language Implementation Committee (OLIC) of the Department are held at regular intervals wherein the progress relating to the use of Hindi in official work in the department is reviewed and based on discussions therein, effective strategy is worked out for the improvement of progressive use of Hindi and implementation of the official language policy. During this period, only one joint meeting was held on 29.09.2020 for two quarters i.e. ending 31st March, 2020 and 30th June, 2020.

Celebration of 'Hindi Pakhwara': In consonance with effective implementation of the Official Language Policy and creating awareness of using Hindi in day-to-day official work, 'Hindi Pakhwara' was organized from 14.09.2020 to 28.09.2020 in the Department. For the purpose of the promotion of Official Language in the Department, 09 Hindi competitions were held maintaining proper physical distancing in view of Covid-19 pandemic. 148 officers/officials participated in these competitions.

Translation Activities: During the period under report, apart from the regular translation of routine material, a number of important and time-bound translation of material relating to Standing Committee on Demand for Grants/Parliamentary Assurances, Action Taken Notes, Cabinet Notes, RTI matters, Parliament Questions, Delay Statements, Monthly Summaries, documents specified in Section 3 (3) of the Official Languages Act, 1963 and other Parliamentary activities was carried out.

Notifying offices under rule 10(4) of the Official Languages Rules, 1976: Besides above official language activities, the Official Language Division also processes the proposals received from corporate offices of BSNL, MTNL etc. to notify their offices under various telecom circles across the country, under rule 10(4) of the Official Languages (use for official purposes of the Union) Rules, 1976, where 80% and above officials have acquired working knowledge of Hindi.

CHAPTER 8

Vigilance Wing

Scope and Functions of Vigilance Wing

Vigilance Wing of Department of Telecommunications (DoT) caters to Vigilance activities including handling of Vigilance/Disciplinary cases in respect of officers/officials posted in DoT and its subordinate offices/ DoT officers deputed to other Departments & Public Sector Undertakings (PSUs) / Board level officers in PSUs under DoT namely, Bharat Sanchar Nigam Limited (BSNL), Mahanagar Telephone Nigam Limited (MTNL), Indian Telephone Industries (ITI) Limited, Telecommunications Consultants India Limited (TCIL), Bharat Broadband Network Limited (BBNL) and Autonomous body - Centre for Development of Telematics (C-DOT).

The Vigilance Wing, inter-alia, is responsible for the following:

- Scrutiny of complaints having vigilance angle.
- Investigation/inquiry of complaints having vigilance angle.
- Examination of the self-contained notes/ CBI reports and its follow up.
- Seeking advice from CVC on the cases having vigilance angle.
- Extending assistance / liaison with CBI /Lokpal/ Police & other agencies in inquiry/ investigation of cases.
- Processing of Prosecution sanction in corruption cases.
- Issues concerning suspension and other departmental actions against the employees concerned in vigilance matters.
- Processing the departmental disciplinary proceedings arising out of vigilance matters, in respect of all employees of DoT including retired employees.
- Coordinating with CVC, UPSC, DoPT and other agencies on vigilance matters.
- Monitoring the implementation of Final Orders issued in Vigilance cases.
- Ratification of major penalties in respect of absorbed employees of BSNL & MTNL.
- Processing the appeal, review and revision petitions in departmental proceedings, arising out of vigilance matters.
- Issue of Vigilance clearances.

- Review under FR-56(j) by respective Cadre Controlling Authorities in the Department and under the similar provisions in the PSUs of the Department.
- Preparation and maintenance of Agreed List, Officers of Doubtful Integrity (ODI) List and necessary action thereon.
- Conduct of periodic/surprise inspections/reviews and scrutiny of Audit reports.
- Suggesting systemic /procedural improvements for ensuring transparency and mitigating scope for corruption or malpractices.
- Identification of sensitive posts and monitoring implementation of rotational transfer policy.
- Scrutiny of 'Annual Property Returns' & 'Intimation of acquisition/disposal of property' in respect of DoT employees.
- Organizing trainings/ workshops on vigilance matters and observance of 'Vigilance Awareness Week'.
- Reviewing the existing arrangements of Vigilance work in the Department, Public Sector Undertakings/ Autonomous Body/ Attached Offices and Subordinate Offices under the administrative control of the Department to assess its adequacy for ensuring expeditious and effective disposal of vigilance matters.
- Appointment of Chief Vigilance Officers in the Public Sector Undertakings/ Autonomous Body/ Attached Offices and Subordinate Offices under the administrative control of the Department.
- Updating relevant data on Probity Portal & System for Online Vigilance Clearance Enquiries (SOLVE) Portal.

To carry out these functions, a full-time Chief Vigilance Officer (CVO) of the rank of Joint Secretary heads the Vigilance Wing in Department of Telecommunications (DoT). CVO functions as the nodal point for Central Vigilance Commission and is assisted by Directors/Deputy Secretaries and other supporting staff in the Vigilance Wing.

Vigilance Activities

- **Complaints and Disciplinary Actions**

  Vigilance Wing of DoT receives the complaints from various sources like President's Secretariat / Prime Minister's Office / CVC / CBI / Members of Parliament/ General Public etc. These complaints are scrutinized and taken up for investigation to identify the delinquent officers/ officials and fix responsibility along with the suggestion for systemic improvements, if any, required.

  During the period (April-2020 to December-2020):-

  (i) **218** complaints were handled.

(ii) **11** officers / officials were awarded major & minor penalties.

(iii) **1** official was compulsorily retired, 3 officials were imposed with the penalty of reduction to lower stage in time scale, 2 officials were imposed 100 % cut in pension, 4 officials were imposed varying cuts in pension and 1 official was exonerated.

(iv) **13** cases for imposition of penalty received from BSNL/MTNL were ratified.

(v) **07** appeal cases against punishment orders were decided.

(vi) **4** charge sheets were issued during the period.

Grievance- PG Portal

1149 grievance petitions received through Centralized Public Grievance Redress and Monitoring System (*CPGRAMS*) from various sources viz. President's Secretariat, PMO, *Department of Administrative Reforms and Public Grievances (DARPG)*, Directorate of *Public Grievances* (DPG) in Cabinet Secretariat and Department of Pensions & Pensioners' Welfare, were disposed.

- **Training & Workshop**

  ✓ One-day training programme on "Familiarization of Rules & Functions of Vigilance Wing" for newly posted officers/officials in Vigilance wing was organized on 27.01.2020.

  ✓ As a part of Induction training of JTOs (2018-Batch), officer trainees were attached to Vigilance wing for one day on 06.02.2020.

  ✓ No further training sessions could be conducted during the year due to COVID-19 pandemic.

- **Vigilance Clearance (VC)**

  This is an important activity of the Vigilance Wing as Vigilance Clearance is required at the time of promotion, retirement, review, absorption, obtaining passports, visit abroad and deputation to other Organizations/ Departments etc. During the period, Vigilance Clearance was issued to 2100 officers/officials for various purposes.

  At present, almost all Vigilance Clearance requests are being processed online and Vigilance Clearances are issued online directly to the concerned requesting Authorities. This has greatly reduced the paper work and time in furnishing Vigilance Clearances.

  A new Sanchar VHR (Vigilance and Human Resource) Portal was introduced to issue Vigilance Clearances and to generate 12- point proforma for processing cases for CVC Clearance in respect of empanelment of JS & above level officers and Board Level appointments in PSUs.

- **Consultation with Statutory/Constitutional Bodies**

  ✓ **Consultation with the Central Vigilance Commission (CVC)**

CVC is the apex vigilance institution having jurisdiction over all Ministries/Departments/ PSUs etc. for vigilance related matters. Action against Government officers/officials is initiated in consultation with the CVC. The Vigilance Wing of DoT coordinates with the CVC for vigilance related matters. CVC advice was sought in respect of seven officers.

✓ **Consultation with the Union Public Service Commission (UPSC)**

Consultation is required with the UPSC in cases where the Disciplinary Authority is the Hon'ble President of India or disciplinary proceedings are initiated under Rule 9 of CCS (Pension) Rules, 1972. In addition, UPSC is also required to be consulted where the Appellate Authority is the Hon'ble President of India and in Review cases where modification in penalty is proposed. During the period, two cases were referred to UPSC for advice.

✓ **Consultation with the Department of Personnel & Training (DoPT)**

Consultation with the DoPT is required in such disciplinary cases where there is a disagreement between Disciplinary Authority (DA) and the UPSC/CVC. DoPT is also consulted in cases where UPSC/CVC directs the DA to consult with the DoPT. During the period, one case was referred to DoPT.

- **Vigilance Awareness Week**

Vigilance Awareness Week (VAW)-2020 was observed in DoT from 27th October, 2020 to 2nd November, 2020. The theme for the week was "सतर्क भारत – समृद्ध भारत (Vigilant India, Prosperous India)".

The VAW started with Pledge taking ceremony which was observed following all the extant COVID-19 Social Distancing Norms. The Pledge was administered by CVO, DoT through Video Conferencing. The event was also webcast enabling the officers to join the pledge from their respective office rooms. A signature campaign was held to support the resolution/theme of this year's VAW. Various competitions like essay, quiz, debate, poster making and slogan writing were held to increase awareness against corruption, amongst the DoT employees.

Vigilance Awareness Week - 2020 was also observed in various field units of the DoT spread across the country.

The concluding and prize distribution function was held at DoT HQ, Sanchar Bhawan. Secretary (T) awarded certificates, mementos and cash prizes to the winners of the competitions held during the week. Secretary (T) also addressed the officers and participants present on the occasion.

- **Preventive Vigilance**

  ✓ Following activities are being coordinated and monitored under 'Review of mechanisms to ensure probity among Government Servants:

    - Review under FR-56(j) by respective Cadre Controlling Authorities in the Department and under similar provisions in the PSUs.
    - Timely disposal of prosecution sanctions as well as disciplinary cases.

  ✓ Regular meetings are conducted with CVOs of PSUs/ Subordinate Offices/Autonomous Body under DoT in order to ensure early disposal of pending complaints and Vigilance matters.

  ✓ Vigilance profiles of Board Level Officers of the CPSEs namely BSNL, MTNL, TCIL, ITI, BBNL & Autonomous Body of C-DoT are being regularly updated on monthly basis on SOLVE (System for Online Vigilance Enquires) Portal maintained by the Department of Personal &Training.

  ✓ 1357 Annual Property Returns of the Officers of ITS and IP&TAFS cadre were scrutinized.

- **Miscellaneous Activities**

  ✓ **Court Cases:** Some court cases against the Department arose out of disciplinary matters and such cases are handled by Vigilance wing. A total of 71 court cases were handled by the Vigilance wing during the period out of which 1 case pertaining to Disciplinary matters was settled and 70 cases are presently pending in various courts/ tribunals.

  ✓ **RTI Applications:** Timely supply of information to citizens under RTI is very important and this aspect is given due importance in Vigilance Wing. During the period, 79 RTI Applications have been disposed by the CPIOs and 6 appeal cases have been disposed by First Appellate Authority in Vigilance Wing.

CHAPTER 9

Welfare of Differently Abled Persons and Women

9.1 WELFARE OF DIFFERENTLY ABLED PERSONS

Introduction

Information & Communication Technology (ICT) service is a great enabler, it enables people to take many decisions in their daily lives—some of which may be associated with sectors like banking, education, healthcare and public services. It is seen that many times Persons with Disabilities (PwDs) are unable to access such services fully because of lack of accessibility features and high cost of equipment. It is therefore, in the interest of everyone that information access creates opportunities for everyone in the society including for Persons with Disabilities (PwDs).

With a view to make Information & Communication Technology (ICT) services accessible to Persons with Disabilities (PwDs), the department is in the process of taking many steps under the flagship program of the Accessible India Campaign (AIC) or Sugamya Bharat Abhiyan. This department provides reservation to the differently abled in accordance with the guidelines issued by the Government of India from time to time for effective implementation of the Right of Persons with Disabilities Act (RPwD) Act, 2016.

9.1.1 Department of Telecommunications

(a) Schemes for the benefit of Differently Abled Persons

As part of the Accessible India Campaign, Telecom Regulatory Authority of India (TRAI)'s recommendations on "Making Information & Communication Technology (ICT) Accessible for Persons with Disabilities" dated 09.07.2018 has been 'in-principle' approved by the Digital Communications Commission (DCC) and subsequently by the Hon'ble Minister for Communications and Information Technology in Nov'2019.Concerned Ministries/Departments have been informed by Dept. of Telecommunications to devise action plan for implementation of the said recommendations. Further, various important public buildings under the administrative control of DoT and its subordinate CPSEs are being identified for making them disabled friendly and barrier-free as per the "Harmonized Guidelines and Space Standards for Barrier Free Environment for PwDs and Elderly Persons, 2016" issued by M/o Housing and Urban Affairs".

The department in coordination with DEPwD is in the process of developing a "Sugamya Bharat App- a Crowd sourcing Mobile Application" to encourage public participation in creating barrier free environment under Information and Communication Technology (ICT) ecosystem. This mobile application is aimed at maintaining a robust and dynamic public information repository of accessibility standards for public buildings & ICT systems while capturing the feedback from public about the issues being faced by PwDs in using public buildings and services.

At present, DoT website is partially compliant to Guidelines for Indian Government Websites-GIGW (Web Content Accessibility Guidelines- WCAG ver 1.0) guidelines issued by NIC. However, as envisaged in TRAI recommendations, the concerned authorities have been advised to make the website WCAG ver 2.0 compliant.

(b) *Budget allocated and expenditure incurred* Nil

(c) *Per Capita expenditure, resources available for their utilization* Nil

(d) *Sanctioned and working strength*

Department of Telecommunications

Representation of SCs/STs/OBCs/PwDs (As on 01/01/2020)									
Group	Total Employee	SCs	STs	OBCs	Others	VH	HH	OH	Other forms of disability
A	**1953**	357	126	226	1244	1	1	7	0
B	**1475**	201	67	67	1140	0	0	10	0
C	**1091**	148	76	212	655	7	1	7	0
Total	**4519**	**706**	**269**	**505**	**3039**	**8**	**2**	**24**	**0**

Wireless Monitoring Organisation

Representation of SCs/STs/OBCs/PwDs (As on 01/01/2020)									
Group	Total Employee	SCs	STs	OBCs	Others	VH	HH	OH	Other forms of disability
A	**1**	0	0	0	1	0	0	0	0
B	**5**	1	0	1	3	0	0	0	0
C	**140**	43	15	30	52	0	0	2	0
Total	**146**	**44**	**15**	**31**	**56**	**0**	**0**	2	0

Sanchar Lekha Bhawan, Prasad Nagar, New Delhi which serves as the administrative office of the Pr. Controller of Communication Accounts under the Department of Telecommunications has taken the following measures for Welfare of Differently Abled Persons:

(i) A separate entry gate with ramp has been constructed for differently abled.

(ii) Detailed sign boards are displayed in the whole office to facilitate differently abled

(iii) Separate counter at Ground Floor with ramp is provided at centre place at Delhi for customer care

(iv) Providing the facility for Life Certificate at home/doorstep of differently abled

(v) Further it has been proposed to procure a wheel chair for the differently abled by March 2021 for usage whenever required

9.1.2 Bharat Sanchar Nigam Limited (BSNL)

In respect of schemes for the benefit of persons with Disabilities, the following schemes are existing in BSNL:

- Double the rates of Transport Allowance for eligible Physically Handicapped employees.
- Rate of transport allowance to blind or orthopedically handicapped employees shall in no case be less than ₹1,000/-.
- As far as possible, subject to administrative constraints, persons with disabilities are posted near their native places within the region.

9.1.3 Mahanagar Telephone Nigam Limited (MTNL)

In respect of schemes for the benefit of persons with Disabilities the following schemes are existing in MTNL:

- **Persons with Disabilities:** The manpower strength as on 30.09.2020 in respect of persons with disabilities is as follows:

Group	Total Working strength	Persons with Disabilities
A	197	0
B	995	18
C	1610	03
D	1079	02
TSM	2	---
Total	**3899**	**23**

MTNL has always endeavoured towards upliftment of social status of physically disabled people by innovating and executing action plans falling under its realm. There are several steps taken by MTNL in fulfilling its social responsibility and few other innovative schemes have been devised for them.

The provisions of reservation for such candidates, as per Government of India Rules have been made in recruitment of officers in various streams.

9.1.4 ITI Limited (ITI)

Manpower strength as on November 2020:

Group	Total Working Strength	SC	ST	Women	Person With Disabilities (PWD)
Officers	**2209**	340	52	357	22
Non-Officers	**726**	160	10	126	6
Total	**2935**	**500**	**62**	**483**	**28**

Facilities provided to SC/ST Employees:

(i) exempted from payment of application / examination fee

(ii) Relaxation in age by 5 years in recruitment

(iii) Concessions in qualifying marks

(iv) Reservation in recruitment and promotion as per Presidential Directives.

(v) Out of Turn allotment of quarters

(vi) Scholarship to the children of SC/ST employees

Facilities provided to Differently Abled Persons:

(i) Differently abled employees are permitted 10 minutes grace time to Punch In and Punch Out for marking their attendance at the commencement and closure of shift respectively.

(ii) Differently abled employees are allotted quarters on out of turn basis

(iii) As per the government directive ITI has been maintaining 4% reservation for PWD in recruitment and the reservation in promotion has also been maintained wherever applicable.

(iv) For PwD candidates, the Company has been relaxing 10 years in age in recruitment for Group C and D posts and 5 years in case of Group A & B posts

9.1.5 Telecommunications India Consultants India Limited (TCIL)

Schemes for the benefit of Differently Abled Persons:

1. Concessions in service conditions are admissible to all Differently Abled employees as per guidelines.

2. Transport allowance at double the normal rate is given to Differently Abled employees as per government guidelines.

3. No physically disabled employee is posted in remote areas where hardship conditions are involved. Their postings/transfers are considered sympathetically.

4. The cases/representations/grievances of disabled persons if any, are considered favorably.

5. A liberal view is taken while forwarding application of Differently Abled candidates outside.

6. Special facilities like separate lift for disabled, stair chair at reception is available for their comfort and convenience.

7. In view of the pandemic situation due to the outbreak and rapid spread of COVID19 across the world, Differently Abled employees are allowed to work from home, However, staff whose presence is required are called on roster basis on alternate days.

9.1.6 Centre for Development of Telematics (C-DOT)

Recruitment of Differently Abled Persons:

For recruitment of Differently Abled Persons, C-DOT follows government rules providing reservation in jobs in C-DOT. The Organisaiton has a system in place to look after the welfare of persons belonging to these categories and address any problems/complaints that may arise.

Benefits for Differently Abled Persons:

C-DOT follows the guidelines issued by GoI with respect to reservations in jobs for Differently abled persons. The differently abled employees are eligible for double the rates of transport allowance. C-DOT campus at both the locations (Delhi & Bangalore) has been constructed in such a manner so as to ensure barrier free environment for the differently abled persons. The main entrance and exit can be approached througha ramp together with stepped entry. Even elevators connecting the various working areas have been installed in a way to facilitate them to move around freely from one wing to another.

9.2 EMPOWERMENT OF WOMEN

In accordance with the commitment of the Government to achieve the goals of gender mainstreaming and gender justice laid down in the National Policy for Empowerment of Women, certain steps have been taken by the Department of Telecommunications and the Public Sector Enterprises under its administrative control.

The Department of Telecommunications is effectively implementing the extant law on prevention of sexual harassment of women at work place in all its units. In pursuance of the relevant and extant Act, it has setup a committee on the sexual harassment of women, headed by a lady officer.

The steps taken for empowerment of women by various functional wings of the Department are given below:

9.2.1 Bharat Sanchar Nigam Limited (BSNL)

In respect of schemes for the benefit of Women, the following schemes are existing in BSNL.

- Maternity leave of 180 days is given to all women employees.
- Child Care Leave as per the provisions of DOP&T OM No. 13018/2/2008-Estt. (L) dated 11.09.2008 is available to women employees.
- Special allowance for Child Care for Women employees with disabilities @ ₹1,000/- per month per child maximum for two children till the child attains two years.
- Grant of Child Adoption leave of 180 days to female BSNL employees and extension of the facility of Paternity leave to adoptive fathers.

9.2.2 Mahanagar Telephone Nigam Limited (MTNL)

Woman Empowerment: The manpower strength and the number of women employees as on 30.09.2020 is as follows:

Group	Total Working strength	Women
A	197	20
B	995	200
C	1610	334
D	1079	243
TSM	2	---
Total	**3899**	**797**

MTNL has always endeavoured towards women participation in the Organization and the Nation Building. As on 30.09.2020, 20.44% of total manpower is of women employees.

In addition, MTNL has also taken several steps towards furthering empowerment of women employees. A few of these are enumerated below:

a. Special care has been taken in case of female employee working in night shift and they are provided with rest rooms/ dormitory. Night Shift Allowance is also paid to them. Night Shifts are organized in such a way that the woman employees do not have to travel at late nights.

b. In order to redress the grievance relating to sexual harassment at work place, Sexual Harassment Complaint Committee has been constituted at Unit level as well as in Corporate Office.

c. Maternity/Paternity leave is also available to employees.

d. Child Care Leave is provided for a maximum period of two years (i.e. 730 days) with pay upto 3 months and without pay upto 2 years inclusive of 3 months with pay.

e. Creche facility has also been provided for women employees with infants.

f. Special Grant is being sanctioned on an annual basis for MTNL Women Welfare Organization, which in turn provides vocational training to kith and kin of working as well as retired/deceased employees.

9.2.3 ITI Limited (ITI) -The Facilities provided to Women Employees:

A. Separate lunch room in canteen, rest rooms and crèches have also been provided in the Units.

B. The Company has comprehensive health care scheme providing medical treatment / reimbursement to the employees and their dependent families. Hospitals have set up in Bangalore, Naini, Mankapur, and Rae Bareli Plants which emphasize women and child welfare.

C. In the light of Supreme Court Judgment on sexual harassment in the work place, the standing orders applicable to women employees have been amended to incorporate the clause on sexual harassment during the year 2004-2005 and CDA rules also were amended accordingly.

D. Complaints Committee formed in each Unit to inquire into complaints of sexual harassment complaint made by any women employees in the Company and also uploaded in Company Website.

E. Care is taken to ensure that women employees are nominated for training programmes, which are need based.

F. In pursuance of the Amendment, to Section 5(3) of the Maternity Benefit Act, 1961, the maternity leave is enhanced in the Company from Twelve Weeks to Twenty-Six weeks with effect from 01/04/2017.

G. Company is celebrating Women's Day every year to encourage women employees

9.2.4 Telecommunications Consultants India Limited (TCIL)

Schemes for Benefit of Women in TCIL

- No discrimination on the basis of gender is done and Women employees are treated equally in line with other male employees. Total 118 numbers of Women are employed as on 30.09.2020.
- At TCIL, we are providing a friendly workplace for our employees and safety & security measures for the employees are strictly enforced ensuring equal opportunities to all our employees.
- Competency mapping and Succession planning is done at various levels and women employees are identified and encouraged to take up leading roles in the organization.
- Job rotation ensures that women and men have equal exposure to all the functions of the organization including mainstream functions such as Project Management, Project Execution, Business Development, Finance and HR.
- Women employees are today holding some of the higher management/ executive posts in TCIL and are involved in decision making process and leadership roles. We also have Committee duly constituted for addressing the grievances regarding harassment at work place and for welfare & security of Women employees.
- Various Leadership Program and gender sensitization sessions were held in TCIL for Women employees.
- Leaves like Maternity, Abortion, & Emergency are in place.
- Work from home provision is also passed by the Board.
- Late hours transportation for all employees, wherever necessary is facilitated.
- It is ensured that proper water, sanitation, and hygiene facilities are maintained at all locations.
- TCIL promotes structured training for skills upgrading programs. Regular talks on various issues affecting women like Health and Safety, Work life Balance and Sexual harassment at workplace are conducted.

- Health Camps are also organized on timely basis.
- Women's Day is celebrated each year with great zeal and fervor.

9.2.5 Centre for Development of Telematics (C-DOT)

C-DOT's Management has always been sensitive to gender issues and has consistently worked towards creating organizational culture reflecting gender equality. Presently, about 32.3% of staff in C-DOT are women.

➢ **Existing Policies:**

- ❖ All female staff members are allowed to avail up to 180 days' maternity leave & up to 90 days leaves subsequent to that (270 days inclusive of 180 days maternity leave). For miscarriage/abortion, leave of a total of 45 days in the entire service span is permissible.
- ❖ Child Care leave is also granted to eligible female staff on their applying for the same, as per rules.
- ❖ C-DOT offers accommodation and transport benefits to all its women employees with different options that maybe availed as per individual needs. This ensures the safety and security of all women employees in the company.
- ❖ Reimbursement for residential telephone expenses is admissible to 100% of the women staff.
- ❖ Career growth opportunities are available to women employees in C-DOT. In the current financial year, of the total employees promoted to higher grades 26% of them were women.
- ❖ In management cadres (Team Leaders, Group Leaders, Technical Experts and Sr. Technical Experts) about 26% are women.
- ❖ As per the directives of Supreme Court, C-DOT has a Complaint Committee for its Centres, at Delhi and Bangalore in case of any complaints relating to Sexual Harassment of women staff at work place for fair and justified view of the complaints, if any, and recommend suitable action on the same to the C-DOT Board.

CHAPTER 10

Audit Observations of C & AG

Audit Observations of C & AG

S. No.	Year	Report No.	No. of Paras/ PAC Reports on which ATNs have been submitted to PAC after vetting by Audit (from April 2020)	Details of the CAG Paras*/ PAC Report** on which ATNs are pending as on 30/11/2020			
				No. of ATNs not sent by the Ministry even for the first time.	No. of ATNs sent but returned with observation and Audit is awaiting their resubmission by the Ministry	No. of ATNs which have been finally vetted by audit but have not been submitted by the Ministry to PAC	No. of ATNs replied by Depart-ment to Audit for vetting
1.	2016-17	4 of 2016	Nil	Nil	Nil	Nil	30
2.	2016-17	29 of 2016	Nil	Nil	Nil	01	Nil
3.	2017-18	11 of 2017	Nil	Nil	06	Nil	Nil
4.	2017-18	35 of 2017	Nil	Nil	05	Nil	Nil
5.	2018-19	21 of 2018	Nil	Nil	01	Nil	Nil
Total			**Nil**	**Nil**	**12**	**01**	**30**

Status of C&AG Audit Paras pending as on 30th November 2020

*Total C&AG Audit Paras of DoT pending as on 30/11/2020 = 43 [12 (Under Modification) + 30 (Sent to Audit) + 01 (Sent for Copy)]

** Total paras of 02 PAC Report pending as on 30/11/2020 = 06 [Sent to Audit]

CHAPTER 11

Annexures

I	**Statistical Supplement**
	• **Telephone per 100 Population-Urban/Rural (Tele-density)** • **Number of Telephones**
II	**Organisation Chart**

ANNEXURE-I

Table-1

Telephone per 100 Population-Urban/Rural (Tele-density) as on 30th November 2019 and 2020.

Sl. No.	Service Area	Tele-Density						Telephones						% of Rural Phones to Overall Phones	
		Overall		Urban		Rural		Overall		Urban		Rural			
		November'19	November'20	November'19	November'20	November'19	November'20	November' 19	November' 20	November' 19	November' 20	November' 19	November' 20	November'19	November'20
1	ANDHRA PRADESH	97.48	98.31	182.87	124.91	64.13	80.76	88501659	88854503	46628329	44886770	41873330	43967733	47.31%	49.48%
2	ASSAM	70.35	68.66	176.53	167.16	48.66	50.88	23759015	23994397	10115449	8931356	13643566	15063041	57.42%	62.78%
3	BIHAR[1]	59.27	52.71	159.17	114.67	43.10	41.47	84920819	84854105	31762208	28351626	53158611	56502479	62.60%	66.59%
4	GUJARAT	103.77	97.05	148.18	121.31	70.16	74.59	68734013	68538581	42275591	41187675	26458422	27350906	38.49%	39.91%
5	HARYANA	97.43	94.35	139.51	129.70	71.58	70.01	28165412	27720499	15345010	15537823	12820402	12182676	45.52%	43.95%
6	HIMACHAL PRADESH	148.81	149.90	401.85	474.25	113.48	112.84	10859954	11065743	3592552	3590107	7267402	7475636	66.92%	67.56%
7	JAMMU & KASHMIR	77.39	86.55	154.16	153.07	46.54	58.11	9952721	11839826	5682314	6271418	4270407	5568408	42.91%	47.03%
8	KARNATAKA	108.52	104.20	163.99	146.20	71.40	72.09	69772221	69517445	42270617	42262175	27501604	27255270	39.42%	39.21%
9	KERALA	124.65	129.00	267.61	98.16	76.57	202.73	45439526	45810740	24550754	24576923	20888772	21233817	45.97%	46.35%
10	MADHYA PRADESH[2]	69.29	68.14	136.60	131.87	43.01	43.19	75437191	77427971	41757817	42162844	33679374	35265127	44.65%	45.55%
11	MAHARASHTRA	91.99	94.09	132.59	144.60	67.45	66.83	94270891	94267349	51177326	50773240	43093565	43494109	45.71%	46.14%
12	NORTH-EAST[3]	84.36	79.29	175.40	116.54	52.39	60.66	12219383	12233415	6603727	5996097	5615656	6237318	45.96%	50.99%
13	ORISSA	76.53	76.28	144.48	144.29	61.15	60.89	33431620	33555904	11647720	11715197	21783900	21840707	65.16%	65.09%
14	PUNJAB	124.24	126.15	177.68	192.80	78.85	75.36	39932617	39716331	26229648	26253191	13702969	13463140	34.32%	33.90%
15	RAJASTHAN	86.15	82.95	169.72	144.27	59.22	61.07	65924226	65555304	31645820	29980264	34278406	35575040	52.00%	54.27%
16	TAMIL NADU[4]	115.93	105.73	124.88	141.30	100.39	65.59	84015730	82341568	57423823	58349019	26591907	23992549	31.65%	29.14%
17	UTTAR PRADESH - [East]	66.10	66.73	136.49	120.80	44.78	49.44	95934797	98508133	42210122	37704485	53724675	60803648	56.00%	61.72%
18	UTTAR PRADESH - [West][5]							63841068	62660896	34618494	32982657	29222574	29678239	45.77%	47.36%
19	WEST BENGAL[6]	68.53	66.74	177.59	110.55	49.95	53.63	55693903	55021181	21010816	20990995	34683087	34030186	62.27%	61.85%
20	KOLKATTA	161.33	161.57	#	#	#	#	26537089	26834342	24527628	24982329	2009461	1852013	7.57%	6.90%
21	DELHI	237.72	274.75	#	#	#	#	56232485	56260411	54664777	53982905	1567708	2277506	2.79%	4.05%
22	MUMBAI	164.10	151.44	#	#	#	#	41084536	38645497	39295661	37357900	1788875	1287597	4.35%	3.33%
ALL- INDIA		88.81	86.55	156.89	139.01	56.71	59.08	1174660876	1175224141	665036203	648826996	509624673	526397145	43.38%	44.79%

Note:Teledensity is calculated for UP(E) & UP(W) jointly due to non availabilty of separate population data for UP(E&W). 1.Includes Jharkhand, 2.Includes Chhattisgarh, 3.Includes North East I&II, 4. includes Chennai, 5.Includes Uttrakhand and 6.Includes A&N Islands. # Rural-urban break up of population for Kolkata, Delhi and Mumbai service areas is not available. **Reliance Jio figures are included from the month of October 2016.**

Source: Population Projections for India & States 2001-2026,O/o the Registrar General of India and subscribers' data from TSPs.

Table-2

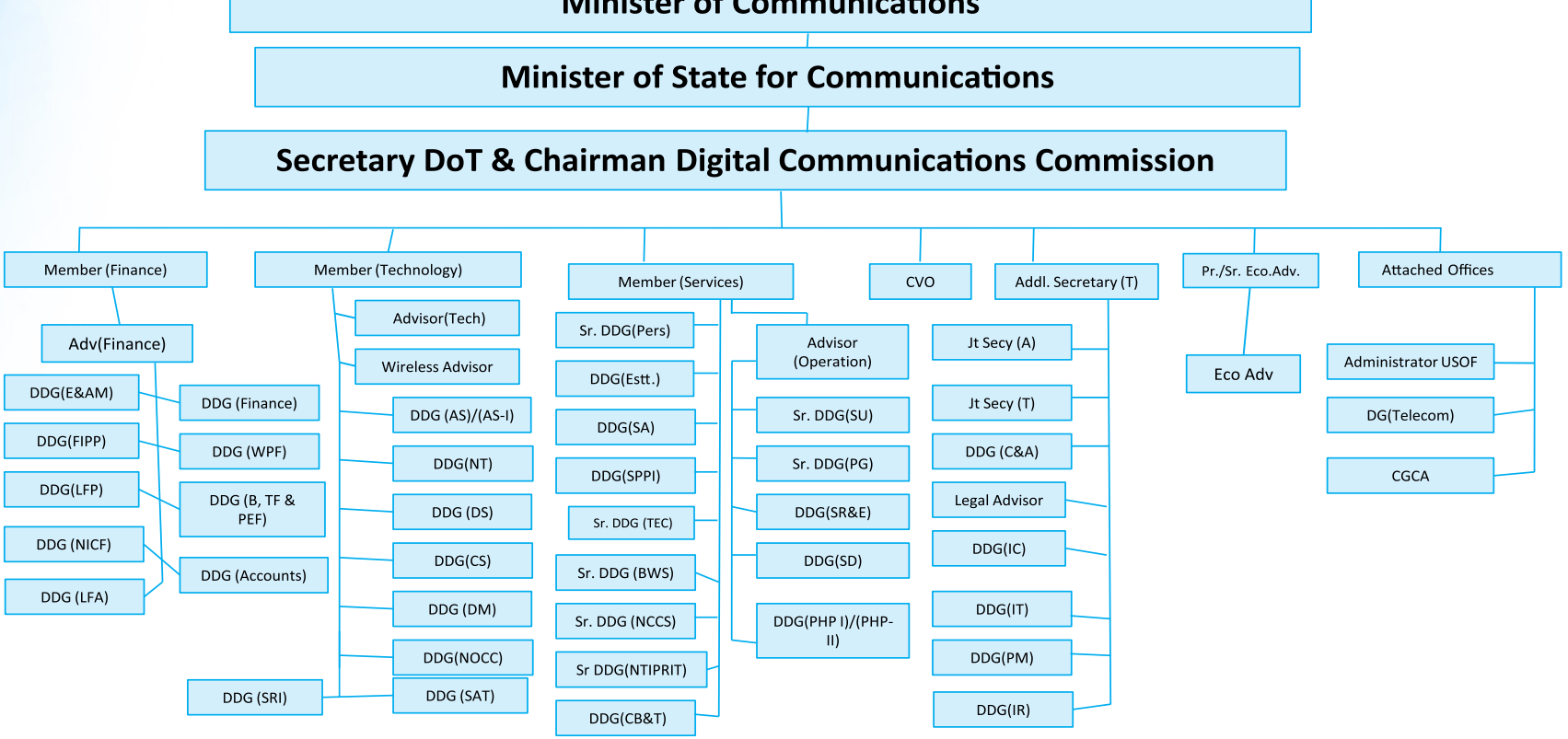
Number of Telephones as on 30th November 2019 and 2020.															
Sl. No.	Service Area	Wireline Phones						Wireless Phones						TOTAL TELEPHONES	
		TOTAL		PSUs' Operators		Private Operators		TOTAL		PSUs		Private Operators			
		November'19	November'20	November'19	November'20	November'19	November'20	November'19	November'20	November'19	November'20	November'19	November'20	November'19	November'20
1	ANDHRA PRADESH	1275020	1360345	809997	652610	465023	707735	87226639	87174384	9927070	9713693	77299569	77460691	88501659	88534729
2	ASSAM	102227	119527	98837	86873	3390	32654	23656788	23739004	2730679	2911755	20926109	20827249	23759015	23858531
3	BIHAR1	167811	198877	155193	135936	12618	62941	84753008	84380195	5140243	5897628	79612765	78482567	84920819	84579072
4	GUJARAT	1064047	966413	836759	532431	227288	433982	67669966	67323964	6076716	6112210	61593250	61211754	68734013	68290377
5	HARYANA	250328	232709	187134	147400	63194	85309	27915084	27440345	4985316	5068181	22929768	22372164	28165412	27673054
6	HIMACHAL PRADESH	102858	91391	99302	83470	3556	7921	10757096	10944269	2940044	2997054	7817052	7947215	10859954	11035660
7	JAMMU & KASHMIR	122540	150809	122540	100586	0	50223	9830181	11701471	1269058	1259888	8561123	10441583	9952721	11852280
8	KARNATAKA	2092887	2156539	933093	796592	1159794	1359947	67679334	67289194	7320502	7256922	60358832	60032272	69772221	69445733
9	KERALA	1777687	1352640	1677609	1215503	100078	137137	43661839	44179584	10928286	10955911	32733553	33223673	45439526	45532224
10	MADHYA PRADESH2	835329	671818	572546	283062	262783	388756	74601862	75989249	6302009	6324565	68299853	69664684	75437191	76661067
11	MAHARASHTRA	1372108	1317812	935736	837260	436372	480552	92898783	92433848	7128441	7040134	85770342	85393714	94270891	93751660
12	NORTH-EAST3	94304	95725	94064	75262	240	20463	12125079	12064839	1465344	1387154	10659735	10677685	12219383	12160564
13	ORISSA	211088	201316	195006	159713	16082	41603	33220532	33317273	5905152	6324069	27315380	26993204	33431620	33518589
14	PUNJAB	701626	684166	337178	260831	364448	423335	39230991	38973023	5679305	5885579	33551686	33087444	39932617	39657189
15	RAJASTHAN	482152	471223	385204	288741	96948	182482	65442074	65109107	6115055	6348026	59327019	58761081	65924226	65580330
16	TAMIL NADU4	2035013	1942198	1281102	1008796	753911	933402	81980717	80002506	12252922	11108090	69727795	68894416	84015730	81944704
17	UTTAR PRADESH - [East]	389356	369623	302460	181230	86896	188393	95545441	97858954	11601074	11625974	83944367	86232980	95934797	98228577
18	UTTAR PRADESH - [West]5	264711	293383	227643	167237	37068	126146	63576357	62004792	5917215	5887605	57659142	56117187	63841068	62298175
19	WEST BENGAL6	175136	234375	170869	201650	4267	32725	55518767	54807019	2021069	2405089	53497698	52401930	55693903	55041394
20	KOLKATTA	648754	661106	415297	348775	233457	312331	25888335	26157542	1790275	2395041	24098060	23762501	26537089	26818648
21	DELHI	3224109	3390276	1427369	1352768	1796740	2037508	53008376	52727086	2187738	2172229	50820638	50554857	56232485	56117362
22	MUMBAI	2877327	3027576	1718280	1653291	1159047	1374285	38207209	36115527	1193720	1157862	37013489	34957665	41084536	39143103
ALL- INDIA		20266418	19989847	12983218	10570017	7283200	9419830	1154394458	1151733175	120877233	122234659	1033517225	1029498516	1174660876	1171723022

Note:1.Includes Jharkhand, 2.Includes Chhattisgarh, 3.Includes North East I&II, 4. includes Chennai, 5.Includes Uttrakhand and 6.Includes A&N Islands. Reliance Jio figures are included from the month of October 2016.

Source: Population Projections for India & States 2001-2026,O/o the Registrar General of India and subscribers' data from TSPs.

ANNEXURE-II

ORGANISATION CHART OF DEPARTMENT OF TELECOMMUNICATIONS



LEGEND

DCC: Digital Communications Commission
DDG: Deputy Director General
WPF: Wireless Planning & Finance
LFP: Licensing Finance Policy
LFA: Licensing Finance Assessment
AM: Asset Management
E&T: Establishment & Training
B&PEF: Budget & Public Enterprise Finance
FIPP: Foreign Investment Policy & Promotion
NICF: National Institute of Communication Finance

AS: Access Services
CS: Carrier Services
DS: Data Services
NT: Network & Technologies
IR: International Relations
DM: Disaster Management
NOCC: National Operations Control Centre
SAT: Satellite
SRI: Standardization, R&D and Innovation
Estt: Establishment
Pers: Personnel
SA: Security (Assurance)
PG: Public Grievances

SD: Skill Development
SU: Service Unit
PHP: Phone Priority
SPPI: Security (Policy Planning & Intelligence)
SR&E: Service Relations & Estate
CB&T: Capacity Building & Training
NCCS: National Centre for Communication Security
TEC: Telecom Engineering Centre
NTIPRIT: National Telecom Institute for Policy Research, Innovation and Training
Eco: Economic
ERU: Economic Research Unit

Jt Secy: Joint Secretary
A: Administration
T: Telecom
C&A: Coordination & Administration
IC: International Coordination
PM: Project Management
IT: Information Technology
USOF: Universal Services Obligation Fund
CGCA: Controller General of Communication Accounts
Tech: Technology

सत्यमेव जयते

Department of Telecommunications
Ministry of Communications
Government of India
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