ANNUAL REPORT

2019-20

सत्यमेव जयते

Department of Telecommunications
Ministry of Communications
Government of India
New Delhi

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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, 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.
- 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 Telecom Services and Department of Telecom 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.

1.1.2 DIGITAL COMMUNICATIONS COMMISSION (DCC)

In order to promote rapid development in all aspects of telecommunications including technology, the Government of India considered it necessary to set-up Telecom Commission (TC) vide Resolution dated April 11, 1989 to deal with various aspects of telecommunications. The Commission is entrusted with responsibility in the entire field of telecommunications. The Government, vide Resolution dated 22nd October, 2018, has re-designated the 'Telecom Commission' as the 'Digital Communications Commission' (DCC). DCC consists of a Chairman and four full time Members, who are ex-officio Secretaries to the Government of India in the DoT and four part time Members who are the Secretaries of the Government of India of the concerned Departments.

The Secretary to the Government of India in the Department of Telecommunications is the ex-officio Chairperson of the DCC. The full-time Members of the DCC are Member (Finance), Member (Production), Member (Services) & Member (Technology). The part-time Members are Chief Executive Officer, NITI (National Institution for Transforming India) Aayog, Secretary (Department of Economic Affairs), Secretary (Ministry of Electronics & Information Technology) and Secretary (Department for Promotion of Industry and Internal Trade). The post of Member(Production) is vacant. The Chairperson, in his/her capacity as Secretary to the Government of India in the DoT, is responsible for arriving at decisions on technical questions and advising the Government on policy and allied matters of telecommunications.

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

The Commission is responsible for:

a) Formulating 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; and

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

1.2 ORGANIZATIONAL CHART

The Organization chart of the Department of Telecom is at **Annexure-3**.

1.3 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 TDSAT performs the role of an appellate body. The details of their functioning are given in Chapter 6.

1.4 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) Head Quarter 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 39 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:[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 Telecom, and is headed by the Administrator, USO Fund, appointed by the Central Government.

[1]*Further details on attached, subordinate and field organisations are in Chapter 4.*

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

Telecom Engineering Centre (TEC): Telecommunication Engineering Centre (TEC) is the technical wing of the Department of Telecommunications. TEC is committed to develop standards for the telecommunication sector in India, to ensure development of world class telecom network and smooth interconnection of individual networks. It discharges its function as a testing & certification body.

Network Operations Control Centre (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 1534 Satellite Earth Stations/ Teleports/DSNG & more than 2,65,000 VSATs. NOCC has endeavoured to provide interference free environment to various satellite users in country while providing mandatory clearances within three working days to applicant agencies.

NOCC is headed by an SAG level officer who is assisted by one or more JAG level officers. The offices of NOCC are located in Delhi, Gurugram and Sikandrabad.

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.

Directorate General of Telecommunications (DGT): Office of Directorate General Telecommunications was created with objective of monitoring and controlling some of the Department's field units in all the 22 Licensed Service Areas (LSAs) located across the country. Headquarters of Director General Telecommunications (DGT-HQ) is located in Delhi. In February 2017, the apex level post of Director General (Telecom) was created. To assist DG(Telecom) one HAG level officer, four SAG level officers & four JAG level officers have also been provided at DG(T) HQ office.

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 post of CGCA was created as a result of the first cadre review of the IP&TAFS. 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.

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, 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.

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. The NICF is headed by an HAG level officer, i.e., the Director General, who is assisted by two SAG level officers, i.e. Deputy Director Generals and two JAG level officers i.e. Directors.

1.5 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 (ITIL), 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 its 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 Rs. 10000 crores and paid up share capital of Rs. 630 crores. At present, 56.25% of the equity is held by Government, and the remaining equity is held by FIIs, Financial Institutions, Banks, and Mutual Funds and other 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 under the administrative control of Ministry of Communications.

For manufacture and supply 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.

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

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

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 Rs. 1000 crore. As per the mandate given by the Government of India, BBNL shall set up, 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 Telecommunication. 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 GROWTH:

The telecom sector exhibited strong growth over the last few years on the back of strong consumer demand and 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. The deregulation of Foreign Direct Investment norms has led an increase in FDI in the sector.

India is currently the world's second-largest telecommunications market with a subscriber base of 1.18 billion. India's growing mobile economy now constitutes about 98% of all telephone subscriptions. The mobile industry has witnessed exponential growth over the last few years driven 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. As per a GSMA report[3] , the mobile industry supports about 6.5% of India's GDP. The figure accounts for both the direct economic activity generated by mobile operators and an indirect effect on the rest of the economy resulting from increased use of mobile technology by individuals and firms. Telecom industry contribution to GDP is expected to reach 8.2% by 2020.[4]

The Government has placed considerable emphasis on growth of 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.

[3] *Mobile Economy- India 2017.*
[4] *https://www.investindia.gov.in/sector/telecom*

As per GSMA Reports[5] , mobile technologies and services generated 4.6% of GDP globally in 2018, a contribution that amounted to $3.9 trillion of economic value added. By 2023, this contribution will reach $4.8 trillion, or 4.8% of GDP, as countries around the globe increasingly benefit from the improvements in productivity and efficiency brought about by increased take-up of mobile services and M2M/IoT solutions. In 2018, the wider mobile ecosystem also supported a total of 32 million jobs (directly and indirectly) and made a substantial contribution to the funding of the public sector, with almost $510 billion raised through general taxation (before regulatory and spectrum fees). Further ahead, 5G technologies are expected to contribute $2.2 trillion to the global economy over the next 15 years, with key sectors such as manufacturing, utilities and professional/financial services benefiting the most from the new technology.

BOX 2.1 **Snapshot of present status at the end of November, 2019**
• Indian telecom network is 2nd largest in the world in terms of telephone connections
• The country has 1174.66 million telephone connections
• There are 1154.39 million wireless telephone connections
• Overall tele-density in the country is 88.81%
• Urban tele-density is 156.82%
• Rural tele-density is 56.71%.
• Share of wireless telephones in total telephones is 98.27%.
• The share of private sector in total telephones is 88.60%.
• Number of Broadband connections is 661.27 million.
Source: DoT

Wire line vs Wireless: India's wireless voice and data services have continued to exhibit phenomenal growth. Landline telephone connections were at 20.27 million while the number of wireless telephone connections stood at 1154.39 million at the end of November'19. Share of wireless telephones stood at 98.27% of all connections. The ever-expanding demand for wireless services has propelled the telecom sector to mobilize considerable resources to create such ecosystem.

Public vs Private: The private sector now firmly dominates the telecom sector with a continuous rise in the number of subscribers. At the end of November'19, the total number of telephone connections provided by the private sector stood at 1040.80 million and number of telephone connections provided by the public sector stood at 133.86 million. The share of private sector in the total number of connections was 88.60% at the end of November'19 (Table 2.1).

[5]*Mobile Economy 2018, and Mobile Economy 2019*

Table 2.1 : Telecom Development Indicators								
Sl. No.	Item		At the end of					
			March'15	March'16	March'17	March'18	March'19	Nov.'18	Nov.'19
1	Number of Telephones (In million)	Overall	996.13	1059.33	1194.99	1211.8	1183.41	1193.79	1174.66
2		Wire line	26.59	25.22	24.4	22.81	21.7	21.96	20.27
3		Wireless	969.54	1034.11	1170.59	1188.99	1161.71	1171.83	1154.39
4		Rural	416.08	447.77	501.81	525.87	514.27	529.01	509.62
5		Urban	580.05	611.56	693.18	685.93	669.14	664.78	665.04
6	Tele-density (Telephones per 100 persons)	Overall	79.36	83.4	93.01	93.27	90.10	91.22	88.81
7		Rural	48.04	51.26	56.98	59.25	57.5	59.30	56.71
8		Urban	149.04	154.18	171.52	166.64	159.66	159.57	156.82
9	%age share	Wireless	97.33	97.62	97.96	98.12	98.17	98.16	98.27
10		Public	10.53	10.26	10.26	10.86	11.28	11.07	11.40
11		Private	89.47	89.74	89.74	89.14	88.72	88.93	88.60
12	%age growth of Total Telephones – over previous year		8.04	6.34	12.81	1.41	-2.34	0.64	-1.60

Tele-density: 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 88.81% at the end of November'19. The rural tele-density was 56.71% while that in urban areas it was 156.82%. Amongst the Service Areas, Himachal Pradesh (148.81%) had the highest tele-density followed by Kerala (124.65%), Punjab (124.24%), Tamil Nadu (115.93%) and Karnataka (108.52%). On the other hand, tele-density is comparatively low in service areas such as Bihar (59.27%), Uttar Pradesh (66.10%), West Bengal (68.53%), Madhya Pradesh (69.29%), Assam (70.35%) and Odisha (76.53%). Amongst the metros, Delhi tops in tele-density with 237.72%, followed by Mumbai (164.10%) and Kolkata (161.33%).

Internet and broadband penetration: The Government has placed considerable emphasis on growth of internet and broadband in the country as part its Digital India campaign. The number of Internet subscribers (both broadband and narrowband put together) which was 636.73 million at the end of March, 2019 increased to 687.63 million by the end of September, 2019. The number of subscribers accessing internet via wireless phones etc. was 665.37 million at the end of September, 2019 while number of wireline internet subscribers was 22.26 million. The number of Broadband subscribers was 563.31 million at the end of March, 2019 and 661.27 million at the end of November'19. There was a net increase of 50.90 million in the Internet subscribers during the period from March, 2019 to September' 2019. India is now the global leader in monthly data consumption, with average consumption per subscriber per month increasing 146 times from 62

MB in 2014 to 9.06 GB in 2019. The cost of data has also reduced substantially, enabling affordable internet access for millions of citizens.

India's leap towards wireless broadband can be the driving force of the economy going forward on the back of rapidly rising data consumption and deployment of necessary technologies by service providers. Rising consumption of data by consumers increasing has also created opportunities for the government to reach out to weaker and marginalized groups and enable social progress by providing services that were previously not feasible. Tapping into these opportunities can unlock the next phase of growth for the Indian economy.

Foreign direct investment: Foreign Direct Investment has played an important role in shaping the progress of the telecom sector over the years, and in financing expansion of telecom infrastructure in the country. The FDI flows in the telecom sector in the last few years have been as follows:

Table 2.2

Year	Rs. crore	US $ Million
2015-16	8,637	1,324
2016-17	37,435	5,564
2017-18	39,748	6,212
2018-19	18337	2668
2019-20(Upto September,2019)	29724	4280

Source: The Department for Promotion of Industry and Internal Trade (DPIIT)

During 2019-20(Upto September,2019) FDI equity inflow touched US $ 4.28 billion –more than 1.5 % rise from the level of US $ 2.67 billion in 2018-19. The substantial foreign inflows in the telecom sector are indicative of the faith of global community in Government policy, reforms and measures taken towards ease of doing business, as well as in the bright prospects of the telecom sector in the country.

2.2 NATIONAL TELECOM POLICY

In 1994 Government announced the **National Telecom Policy - NTP 1994**. The important objectives envisaged telephone on demand, provision of world class services at reasonable prices, ensuring India's emergence as a major manufacturing/export based on telecom equipment and universal availability of basic telecom services to all villages. It also recognized that funds required would not be available out of Government sources and involvement of private sector was required to bridge the resource gap.

Accordingly, Government invited private sector participation in a phased manner from the early nineties. The **National Telecom Policy 1999 (NTP-1999)** was necessitated inter-alia due to non-fulfillment of certain objectives of NTP 1994 and also due to the fact the far reaching

developments had taken place in the telecom and allied sectors. The main objectives of NTP 1999 included availability of affordable and effective communications for citizens, Telecommunications development in remote, hilly and tribal areas of the country, creation of modern and efficient Telecommunication infrastructure taking into account the convergence of IT, media, Telecom and consumer electronics. It also included transformation in a time bound manner of the Telecommunication sector to a greater competitive environment providing equal opportunities and level playing field for all players, strengthening of Research & Development efforts, providing impetus to build world class manufacturing capabilities, achieving efficiency and transparency in spectrum management etc. Most of the quantified targets for NTP 1999 were achieved. In pursuance of NTP 1999 service provision function of DoT was hived off to a new corporate entity BSNL.

Since the objectives of NTP-1999 were achieved, the National Telecom Policy-2012 (NTP-2012) was issued with a primary objective of maximizing public good by making available affordable, reliable and secure telecommunication and broadband services across the entire country. The main thrust of the Policy was on the multiplier effect and transformational impact of such services in furthering the national development agenda while enhancing equity and inclusiveness.

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, a new National Telecom Policy (re-christened as National Digital Communications Policy – 2018) was announced in the year 2017.

2.3. NATIONAL DIGITAL COMMUNICATIONS POLICY-2018

National Digital Communications Policy – 2018 (NDCP-2018) was formulated after several rounds of stakeholder consultations. As part of the consultative process, National level consultations with all stakeholders were held, including industry and academia. Inputs were also obtained from TRAI. Thereafter, draft NDCP– 2018 was prepared and released in public domain for wider consultations and a month's time was given for receiving the public comments.

To obtain inputs from State/UTs, a one-day interactive session on draft NDCP-2018 was held on 11th May, 2018 under the chairmanship of Hon'ble Minister for Communications.

Several inputs/views/comments were received during this session. A meeting of the Consultative Committee of Parliament on "National Digital Communications Policy, 2018" was held on 30th May, 2018 under the Chairmanship of Hon'ble Minister of State. Several inputs/views were also received in this meeting.

A large number of responses were received from public (through online portal, email, letters) and inputs were also obtained from various Ministries. Based on the analysis of feedbacks received from various stakeholders, the draft NDCP-2018 was finalized and placed before the Telecom Commission. After the Telecom Commission recommendation, the draft NDCP-2018, was approved by the Union Cabinet and notified on 22nd October, 2018.

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.

NATIONAL BROADBAND MISSION:

National Broadband Mission(NBM) 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:

- Broadband access to all villages by 2022
- Facilitate universal and equitable access to broadband services for across the country and especially in rural and remote areas

- Laying of incremental 30 lakhs route km of Optical Fibre Cable and increase in tower density from 0.42 to 1.0 tower per thousands of population by 2024
- Significantly improve quality of services for mobile and internet
- 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
- Develop a Broadband Readiness Index (BRI) to measure the availability of digital communications infrastructure and conducive policy ecosystem within a State/UT.
- Creation of a digital fibre map of the Digital Communications network and infrastructure, including Optical Fibre Cables and Towers, across the country
- Investment from stakeholders of USD 100 billion (Rs 7 Lakh Crore) including Rs 70,000 crore from Universal Service Obligation Fund (USOF)
- Address policy and regulatory changes required to accelerate the expansion and creation of digital infrastructure and services
- Work with all stakeholders including the concerned Ministries / Departments/ Agencies, and Ministry of Finance, for enabling investments for the Mission

Broadband Readiness Index for State/UTs

Rapid changes in digital technologies for digital transformation in a country, if managed effectively, will bring good results to our country in terms of development of infrastructure which in turn bring its benefits to the general public. In order to expand mobile and broadband connectivity across the country, it is necessary to explore and utilize the opportunities presented by next generation-networks like 5G and other pioneering network access technologies including satellite communications. This requires:

a) Robust digital communication infrastructure; and

b) Investor friendly climate regime that can attract investments from abroad which can facilitate the development of digital communications in India.

The National Digital Communication Policy-2018 (NDCP) acknowledged 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, the NDCP envisaged the measurement of Broadband Readiness Index (BRI) of the States/UTs in order to address RoW challenges and attract investments.

The framework on BRI parameters has been prepared based on the objectives of NDCP-2018 and the industry/expert inputs received during the preparation of NDCP-2018 and subsequent discussions. The BRI is envisaged to accomplish the following objectives:

- Create Robust and High-Quality Digital Communications infrastructure
- Attract Investments in creating next generation DC infrastructure
- Simplification of compliances and procedures
- Create a collaborative institutional mechanism between Centre, States and Local Bodies

The framework will not only evaluate State's relative development but will also allow for better understanding of a State's strengths and weaknesses that can feed into evidence-based policy making. The index consists of 9 indicators falling under 6 broad areas, viz., Policy, Accelerated action, Service Infra, Enabling Infra, Public access of Internet and Fiberization. Details of BRI parameters is at Annexure.

The outcomes of BRI study include:

a) A State level broadband readiness index for a point in time (replicated annually)

b) State rankings based on the index scores (published annually for comparison across States)

c) Identification and evaluation of best practices for adoption by other States

d) A Report analyzing State rankings and regional comparisons for trends in digital infrastructure and adoption

Department of Telecom has entered into a Memorandum of Understanding (MoU) with Indian Council for Research on International Economic Relations (ICRIER), an autonomous, policy-oriented, not-for-profit, economic policy think tank, on 16th July 2019 to develop Broadband Readiness Index for Indian States and Union Territories for the period 2019-2022.

Regional Workshop with States/UTs:

Department of Telecommunications (DoT), Ministry of Communications as a part of its nationwide State Government outreach programme to achieve goals of National Digital Communications Policy 2018 concluded its first chapter of awareness workshop with Southern State Authorities (Karnataka, Andhra Pradesh, Telangana, Kerala, Tamil Nadu, Puducherry, A&N Island and Lakshadweep Island) on 16.09.2019. The workshop discussed about Broadband Readiness Index (BRI) for States/UTs, Right of Way policy issues, Implementation and utilisation of BharatNet, Connectivity to uncovered villages, Electromagnetic Field (EMF) related issues, etc.

The workshop was presided by Secretary (Telecom), DoT along with Chief Secretary, Tamil Nadu,

Chief Secretary, Andaman& Nicobar Islands and attended by Senior Officers from Department of Telecom and State/UT Governments. The workshop was also attended by various stakeholders such as Infrastructure Providers (IP-1), Telecom Service Providers, State Governments, Union Territories, local authorities and municipal corporations from Southern States of India.

The workshop 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.

Champion Service Sector Scheme:

The Union Cabinet on 28 Feb'2018 approved the proposal of Department of Commerce (DoC) 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 Department of Commerce. 'Communication Services' has been identified as one of these Champion Services Sectors and 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 Rs. 5000 crores to enable expedited approvals for funding, as required, of sectoral initiatives of the identified Champion Services sectors. Accordingly, under Champion Services Sector Scheme (CSSS), Department of Telecommunications (DoT) proposed following 2 sub-schemes (with total financial outlay of Rs. 150.2 Crores) to Department of Commerce:

a. **Brand-building of India as Telecom Manufacturing and Services Destination (financial outlay of Rs.46.2 Crores over 3 years):** 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) (financial outlay of Rs. 104 crore over 3 years):** The initiative will also promote indigenous innovation and incubation of future technologies and their deployment/ manufacturing thereof, for the Indian communication services sector.

Investment Promotion

Preference to Make in India (PMI) policy: Preference to Make in India (PMI) policy is an important tool to leverage our large domestic market to nurture domestic companies. In line with DPIIT's Public Procurement (Preference to Make in India), Order 2017, DoT has notified the Public Procurement (Preference to Make in India) Order, 2017 for telecom products, services and works for telecom sector on 29.08.2018. Manufacturers and suppliers of these 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. PMI will make available market access to domestic companies and huge domestic market will enable them scaling up their production and also being competitive.

(b) **Import and Export of Telecom equipments including mobile phones, parts 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 2018-19 is Rs. 1,24,992 crore and from April 19 to November 19 is Rs. 70,438 crore. As per DGCIS, the export of telecom equipment including mobile phones, parts and telecom cables during 2018-19 is Rs. 23,076 crore and from April 19 to November 19 is Rs. 24,564 crore.

2.4. HARNESSING EMERGING TECHNOLOGIES

Networks & Technologies

(1) Indigenous 5G Test Bed:

The progress of the multi-institute collaborative project with financial support of DoT to set up 'Indigenous 5G Test Bed' in India in collaboration with various IITs and other premier institutions is on track. The progress made regarding the Test Bed was showcased in the India Mobile Congress (IMC)-2019 held w.e.f. 14th to 16th October, 2019 at New Delhi through live demos. The development efforts of the collaborating institutes were widely acclaimed and it generated keen interest amongst academia, industry, Government officials etc.

(2) Net Neutrality

In conformity with the directives of DoT dated 31st July, 2018 establishing a regulatory framework adhering to the fundamental principles and concepts of Net Neutrality, the terms of various license agreements governing the provision of Internet Services in India have been amended.

Besides, DoT has sought additional recommendations on Traffic Management Practices (TMPs) and the composition, functions, role and responsibilities of the multi-stakeholder body from TRAI. Accordingly, TRAI has issued the consultation paper titled 'Traffic Management Practices (TMPs) and Multi-Stakeholder Body for Net Neutrality' on 2nd January, 2020.

(3) Development of Online License Management System of DoT

A web based portal, namely SARLSANCHAR (Simplified Application for Registration and Licenses) was launched by DoT to improve ease of doing business, ensure transparency and to make the licensing process more efficient. Initially the portal covered receipt of applications from applicants for issue of new Unified Licenses and Other Service Providers (OSP) registrations.

During the F.Y. 2019-20 various new features are added to the portal. These includes, OSP Migration feature through which old DoT OSP portal data have been migrated to Saral Sanchar portal.

Also, new module of WPC Wing related to ETA (Equipment Type Approval-Self Declaration) was implemented. With introduction of this feature, applicants are able to apply online for Equipment type approval certificate in self-declaration basis.

(4) Policy initiatives on Machine to Machine (M2M) Communications

Machine to Machine (M2M) Communication refers to a wireless or wired network setup that allows devices of the same type and ability to communicate freely. It describes the interaction of billions of devices and machines that are connected to the internet and to each other. These

physical objects integrate computing capabilities that enable them to capture data about the world around them and share this with other connected devices, creating an intelligent network of 'things' or systems. M2M communication is considered to be a key enabler of applications and services across a broad range of vertical markets (e.g., health-care, logistics, transport, utilities, etc.).

An inter-ministerial working group has been constituted to identify critical M2M services and to list out regulatory requirements for such identified critical M2M services. Additionally, one M2M Rel-2 specifications for M2M standards were transposed by TSDSI and same are in the process of adoption as national standards through Telecom Engineering Centre(TEC).

(5) 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 16th January, 2020 India stands at 2nd position (out of more than 250 countries) with IPv6 use ratio at 63.71%.

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 the benefit of women and other important sections of the society issued this year are:

(a) The short code'14423' is issued by DoT (AS-III Section) as Kilkari Helpline to Ministry of Health and Family Welfare.

(b) The short code '155254' is issued by DoT (AS-III Section) to Gender Park, Department of Women & Child Development, Government of Kerala.

(ii) Closure of Services: To provide telecom services in India, a company needs to have corresponding License from DoT. A licensee may be required to close either all or part of the services provided by it in its License. Clauses exist in the various types of License Agreements

for the process be followed by the licensee for such closure of services. Due to advent of new technologies, market-based spectrum management and various such other reasons, an access service licensee may change the technology used by it for providing the access services and such change may lead to discontinuity of services to some of its customers. In this backdrop, based on TRAI Recommendations, DoT has issued amendments in the License Agreements on 24.01.2019, in the clauses related to process of closure of services by Access service licensees and also the definition of Mobile Number Portability (MNP).

(iii) Approach towards Sustainable Telecommunications: Instruction for reduction in Average Carbon Emission and to achieve the reduction in carbon footprint target, is issued to all access services licensees also on 15.05.2019.

(iv) Advisory for sharing of In-Building Access: Based on TRAI recommendations, advisory has been issued to all the Telecom Service Providers (TSPs) to share the In-Building Infrastructure (IBS, OFC & other cables, ducts, etc.) with other TSPs, in all the existing Government/ public buildings/ places like Airports, Railway Stations, Bus Terminals, Metro Stations/ Lines, hospitals, etc., as per the terms and conditions of their respective licenses. Also, Ministry of Housing and Urban Affairs has been requested to issue necessary advisory/ guidelines to various agencies regarding the same.

(v) Location Routing Number (LRN) to Unified License (Virtual Network Operator) (VNO): Original VNO license did not allow LRNs to be granted to VNOs. To fulfil the requirements of recent regulations issued by TRAI related to MNP, the VNOs represented for LRNs to be issued to them also. Accordingly, amendment has been issued on 20.11.2019, in Unified License (VNO) & UL (VNO) guidelines that LRNs can be issued to UL (VNO) Licensees also.

(vi) Flight and Maritime Connectivity Rules, 2018 were notified in Gazette of India on 14.12.2018. Based on various queries raised by the stakeholders, it was clarified that whereas the authorization for In Flight and Maritime Connectivity (IFMC) service under the Flight and Maritime Connectivity Rules, 2018 is mandatorily required for providing wireless voice or data or both type of services in Indian air space and Indian territorial waters, but the IFMC Service Provider so authorized may provide such services in geographical areas such as Exclusive Economic Zones (EEZ), High Seas, etc. in accordance with the rights granted to State under the international laws. IFMC service authorizations have been issued to 10 companies up to 23.12.2019. Maritime Connectivity Services have been launched by Hon'ble MOC and MOSC at Mumbai on 13.09.2019.

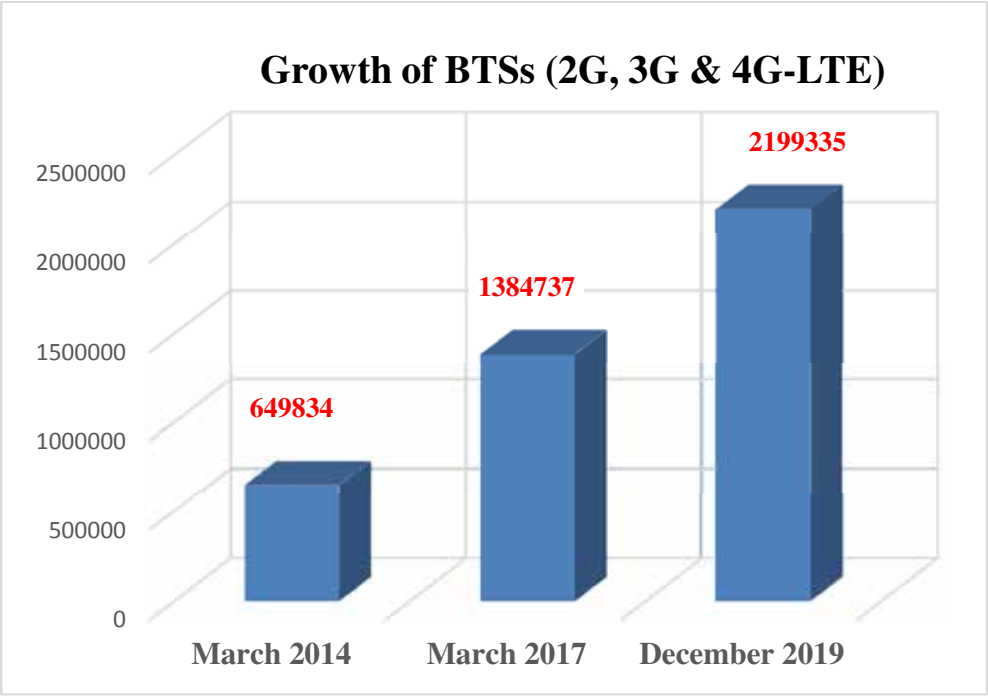
(vii) Introduction of Digital KYC(D-KYC) process for issuing of mobile connections to the customers. In compliance to Hon'ble Supreme Court judgment in the W.P.(C)494/2012 and connected maters, the Aadhaar based E-KYC process was discontinued in Oct 2018. Proof of concept for the D-KYC process was introduced in Nov 2018. On 03.04.2019, the Department of

Telecommunications issued instructions for adopting the D-KYC process for issuing of mobile connections to the customers. In this process, the live photograph of the customer, his PoI/ PoA documents and Point of Safe is captured and the SIM is activated by the Telecom Service Provider, thereby making the KYC process paperless and fully digital.

(viii) Through letters dated 10.4.2019 (a) merger of 'Demerged Undertaking1' and 'Demerged Undertaking 2' of Tata Teleservices Ltd with Bharti Airtel Ltd and Bharti Hexacom Ltd respectively and (b) merger of the 'Demerged Undertaking of Tata Teleservices (Maharashtra) Ltd with Bharti Airtel Ltd was taken on record by the department subject to fulfilment of certain conditions mentioned therein.

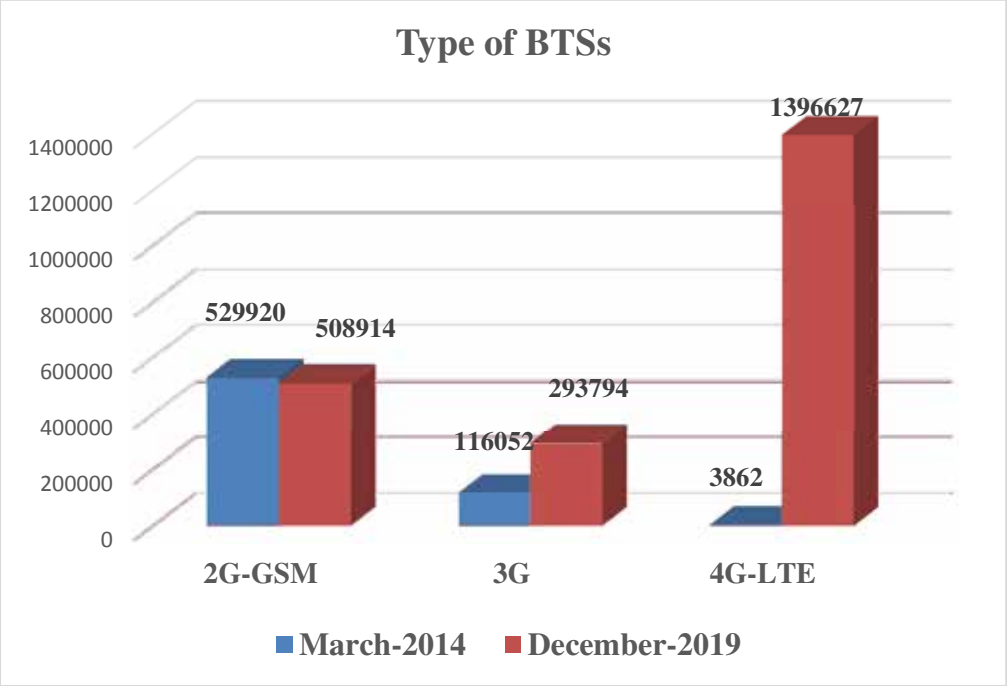
(ix) The Government has taken several policy initiatives to facilitate infrastructure growth which include permitting trading/sharing/ liberalisation of spectrum, permitting passive & active infrastructure sharing, notification of Right of Way Rules 2016, making available government land/buildings for installations of towers etc. As a result, around 15.5 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 31st December, 2019 (21.99 lakh BTSs) and 1.70 lakh mobile towers have been added during the period from December, 2015 (4.15 lakh) to 31st December, 2019 (5.86 lakh mobile towers) across the country.

- BTS Growth during 31st March 2014 to 31st December, 2019:



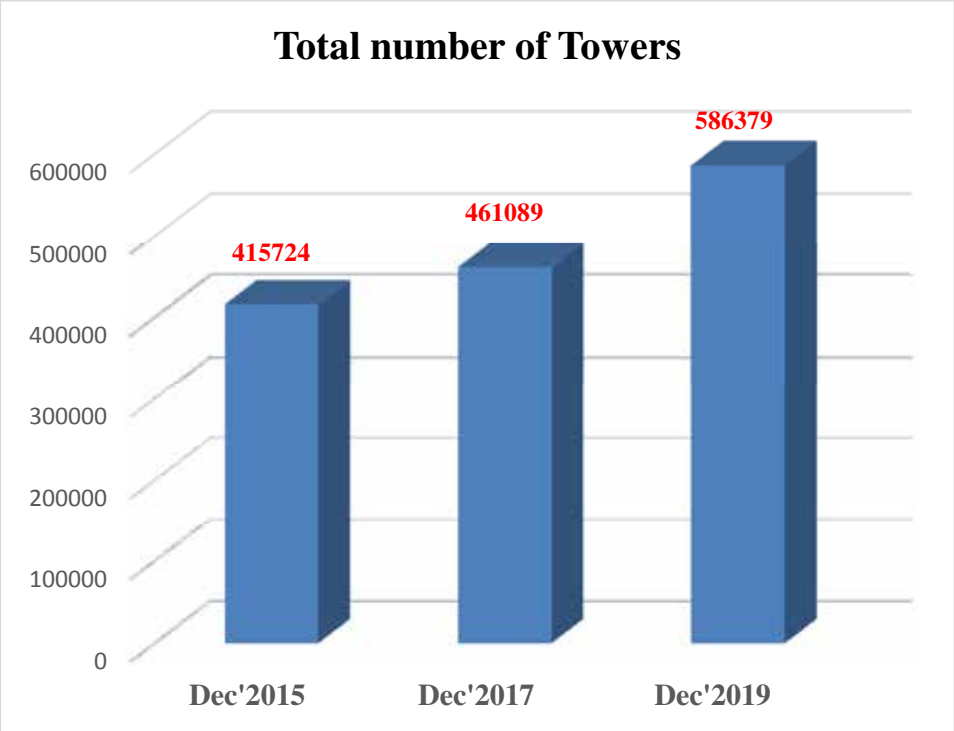
Source: TARANG Sanchar Portal & CoAI

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



Source: TARANG Sanchar Portal & CoAI

- Tower Growth during December 2015 to 31st December, 2019



Source: TARANG Sanchar Portal & CoAI

(x) 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 3.43 Crore subscribers have been individually contacted out of which 47.99 lakh subscribers have participated in the survey & 27.62 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 1.21 lakh individual cases of call drops are resolved, 3.32 lakhs issues other call drops (billing, MNP, data, device, roaming etc.) & around 17.19 lakh temporary issues/no issue have been undertaken so far. Also 6247 new BTSs are installed specifically to address IVRS complaints.

(xi) Anticipated achievements/Projections:

- Amendment in UL (VNO) guidelines and licences for provision of connectivity from multiple TSPs in an EPABX owned and operated by a VNO (Virtual Network Operatory) Access Service Category 'B' Licensee is under submission.
- The norms for network testing before launch of commercial services were issued on 09.10.2018. Further, the norms to be followed for giving extension to a TSP beyond 90 days are under process.

2.5 MERGERS & ACQUISITIONS

The Department of Telecommunications has taken on record the following demerger/ merger cases:

(i) Demerger/ merger of M/s Tata Teleservices Maharashtra Limited (TTML) with M/s Bharti Airtel Limited (BAL), and (ii) Demerger/ merger of M/s Tata Teleservices Limited (TTSL) with M/s Bharti Airtel Limited (BAL) & M/s Bharti Hexacom Limited (BHL).

2.6 GRANT OF LICENCES

(i) Internet and Broadband Services.

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

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

As on 31.12.2019, there are 151 authorized Licences for Internet Services Providers (lSPs) which include 45 Category “A” Licences, 82 Category “B” Licences and 24 Category “C” Licences.

As on 31.12.2019, 1600 Unified Licences have been issued with lSP authorization for various Categories. This includes 5 5 Category “A” ISP authorization, 547 Category “B” ISP authorization, 998 Category “C”ISP authorization.

As on 31.12.2019, 269 Unified Licences (VNO) have been issued with ISP authorization for various Caegories. This includes 25 Category “A” ISP authorization, 211 Category “B” ISP authorisation, 33 Category “C” ISP authorization.

(ii) Very Small Aperture Terminal (VSAT) 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 between various sites scattered throughout India using VSATs and central hub. There are two categories of VSAT licences:

- Captive CUG VSAT Licence wherein the licensee company can set up VSAT network for its internal use only. As on 31st March, 2019, there are 23 captive CUG VSAT networks.
- VSAT CUG service authorization under Unified Licence wherein the licensee company can provide VSAT CUG service to a number of CUGs on commercial basis. As on 31st March, 2019, there are 10 Licences for providing commercial VSAT services.
- There are two Telecom VNO Licences for VSAT
- Global Mobile Personal Communication by Satellite (GMPCS): The Licensee shall establish Land Earth Station (Gateway) in India for the purpose of providing Global Mobile Personal Communication by Satellite (GMPCS) Service. The operation and maintenance center of the GMPCS Gateway shall also be located in India. The Licensee shall demonstrate the system capabilities with respect to security aspects including monitoring to the Licensor or its authorized representative prior to starting of operations in India.

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 has started giving Global Satellite Phone Service (GSPS) w.e.f. 24.05.2017.

(iii) Carrier Services

i. **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, Government has issued 27 ILD Licences and 34 NLD Licences (including BSNL). After the introduction of Unified Licencing Regime, the new Licences to operate NLD & ILD services are being given as authorization under Unified Licence. Under Unified Licencing (UL) regime, in addition to above-mentioned licences, seven licencees have been authorized to offer ILD services and thirteen licencees 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 Licence (Virtual Network Operator) [UL (VNO] regime has also been introduced, under which NLD & ILD service authorization can be given.

ii. **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. As on 31.12.2019, 1034 companies have been registered as Infrastructure Provider Category-I.

iii. **Public Awareness Programs on EMF emission issue:** The 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, initiated by DoT in 2016-17, has further been followed up at sub-state level by the LSA field units 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

iv. **Launch of National EMF Portal:** Department of Telecommunications (DoT), Ministry of Communications 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. Filed units of DoT at the Licensed Service Area (LSA) 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 information on various leaflets, articles and Frequently Asked Questions. The portal has the complete collated technical details of over 20 lakh base stations (BTSs) spread across the country of all technologies (2G, 3G, 4G etc.) and of all Telecom Service Providers (TSPs).

v. **Voicemail/ Audiotex/ Unified Messaging Service (UMS):** 69 Licenses are in existence as on 31.12.2019 for providing Voicemail/ Audiotex/ Unified Messaging Service (UMS). There is no entry fee or license fee for Voicemail/ Audiotex/ UMS.

vi. **Public Mobile Radio Trunking Service (PMRTS):** 40 licenses are in existence as on 31.12.2019 in 3 metros and 12 circles for providing Public Mobile Radio Trunking Service (PMRTS). One UL (VNO) license has also been issued.

2.7 TELECOM INFRASTRUCTURE

(i) BharatNet

'BharatNet', a flagship project of Govt. of India, is being implemented in a phased manner to connect about 2.5 lakh Gram Panchayats (GPs) in the country The project is being executed by Bharat Broadband Network Limited (BBNL), a Special Purpose Vehicle (SPV), to establish, manage & operate the BharatNet infrastructure. This is the one of the largest rural connectivity project of its kind in the world and is the first pillar of Digital India Programme. The broadband infrastructure created under the project would be available to all categories of service providers on non-discriminatory basis.

The work execution of connecting the GPs, being completed in a phased manner is as follows:

Phase- I: The target of completing 1,00,000 GPs under Phase- I of BharatNet has been achieved in Dec 2017 through 3 CPSUs namely BSNL, RailTel and PGCIL by using incremental OFC. Additional approx. 25,000 GPs are being executed as additional work front as per Phase- I methodology.

Phase- II: BharatNet Phase- II is under implementation to connect the remaining approx. 1,25,000 GPs by an optimal mix media like underground OFC, Aerial OFC, Radio and Satellite.

Implementation of Phase- II of the project is through following models:

- **State-led Model:** About 65,590 GPs in 8 States namely Andhra Pradesh, Telangana, Chhattisgarh, Tamil Nadu, Jharkhand, Gujarat, Odisha and Maharashtra are being implemented through State-led model.
- **Private Sector-led Model:** About 7494 GPs in 2 States namely Punjab and Bihar are being implemented through private sector model directly by BBNL.

- **CPSU-led Model:** About 25157 GPs in MP, Uttar Pradesh and Sikkim are being implemented through BSNL.
- **Through 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 4821 GPs.
- **PPP Model:** The remaining GPs are being implemented under this model which has been approved by the Digital Communications Commission and are being taken to the Union Cabinet for information.

Box 2.2 BharatNet: Implementation of the project in two Phases

❖ **Phase-I (Revised workfront) : Around 1.25 Lakh GPs**

- Phase- I to connect 1 lakh GPs is complete.
- Implementation through CPSUs: BSNL, RailTel, PGCIL
- CSC to Maintain, Operate & Market the Network
- Existing fibre of BSNL (between Block to GPs) used to lay and connect new OFC under the project.
- Additional 25000 (approx.) GPs was taken up under revised workfront of this phase and at present work is under progress in these GPs.

❖ **Phase-II: Around 1.25 Lakh GPs**

- Life time maintenance of network by implementation agency.
- States/BBNL responsible for operations of Network.
- Services provisioning through Service Providers and States.
- Viability Gap Funding for last mile solution such as Wi-Fi Hotspot.
- The Satellite component of Ph-II is being implemented by BBNL (4821 GPs) and BSNL (1407 GPs)
- Implementation through PPP Model

❖ **Overall Project Status as on 24th January' 2020**

- Length of OFC laid: 4,08,926 Km
- No. of GPs where OFC Laid: 1,46,717 GPs
- GPs to which OFC connected & equipment installed: 1,32,993 GPs
- No of GPs Service commissioned on Satellite: 1255 GPs

(ii) Public Wi-Fi Access

As part of BharatNet project, the Last Mile connectivity, through Wi-Fi or any other suitable broadband access technology, is to be provided in all Gram Panchayats. In the 1.23 lakh GPs (approx.) of BharatNet Phase-I, the provisioning of Wi-Fi Services has been assigned to CSC e-Governance Services India Limited (a Special Purpose Vehicle under Ministry of Electronics & Information Technology) and RajCOMP Info Services Ltd. (RISL), a fully owned Company of Government of Rajasthan etc. In the 1407 GPs of BharatNet Phase-II, the provisioning of connectivity over satellite media, along with Wi-Fi services, has been assigned to BSNL. As of January 2020, Wi-Fi hotspots have been installed in 45,769 Gram Panchayats (GPs) and out of them, services are being provided in 18,037 GPs.

In addition to the Wi-Fi hotspots provisioned in the BharatNet, the Government is setting up 25,000 Public Wi-Fi Hotspots infrastructure at BSNL's Telephone Exchanges in rural areas.

(iii) Towers and BTS

The number of Mobile Base Transceiver Stations (BTS) has seen a rise from 6.5 lakh in March, 2014 to over 21.99 lakh at the end of December, 2019 added over 15.5 lakh showing a growth of 238%. The total number of Towers for mobile services was 4.15 lakh in December, 2015 has increased to 5.86 lakh at the end of December, 2019 added 1.7 lakh during this period showing a growth of 41%.

(iv) 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 Rs.9175.16 Crores. This amount included Rs.1077.16 Crores for Air Force and Rs.8098 Crores 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 Rs. 13,334 crore. Further, CCEA in its meeting held on 16th May 2018, has given the enhanced financial approval of Rs. 24,664 crore. The revised timeline of completion of project is May 2020.

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 / Advanced Purchase Order has been placed by BSNL for the all the components. Till date, nearly 95% of OFC has been laid. It is expected that the project would be completed by Dec 2020.

2.8 OTHER IMPORTANT INITIATIVES

2.8.1 DIGITAL PAYMENTS MISSION

Under the Digital Financial Mission in the country, the Department of Telecom with a 1.2 billion strong subscriber base requires to monitor and promote Digital modes of payments for not only the department but also the Telecom sector (TSPs, ISPs, Retailers and other stakeholders). For the year 2019-20 the Sector has achieved digital transactions for 163 Cr till September 2019 against a target of 325 crores. In addition, the department took up the following initiatives: -

- Encouraging the TSPs/ISPs to incentivize cashless transactions by providing various offers like cash back, extra data and extra talk time as cashless transactions.
- Promoting Digital Payments in the 100 Smart Cities by hosting “Digital Payment Melas” in 81 Smart Cities in partnership with TSPs and NPCI for telecom retailers where different payments options were demonstrated to the telecom retailers and other stakeholders emphasizing on the promotion of Low cost solutions like BHIM app and Bharat QR code.
- Coordinated the on-boarding of all Telecom Service Providers to BBPS (Bharat Bill Payment system).

2.8.2 Digitization of Accounting functions under DFU (Digital Finance Unit)

The DFU (Digital Finance Unit) has been set up under the Accounts Section to carry out the

activities for Digitalization of all accounting and budgeting functions, implement the applications and to administer the projects to ensure smooth functioning of IT solutions across all DoT Finance units, some of which are listed below: -

i. Development of SAMPANN, implementation and maintenance of Helpdesk

ii. Implementation of PFMS/NTRP (Bharat Kosh) and maintenance of the Helpdesks.

iii. Implementation of GPF direct payment and maintenance.

iv. Implementation of SWR (Finance MIS) and maintenance.

v. Implementation of EIS and phasing out COMPACT.

2.8.3 Enhance focus on Standardization – R&D – Innovation (S-R-I) Activities

1. National Digital Communication Policy (NDCP) brought a renewed focus on positioning India as a design and manufacturing hub in Digital Communication Technologies (DCTs). To enable a focused approach, DoT constituted a new division in July 2019 to work on "Standardization – R&D – Innovation" and build collaboration among different DoT entities including TEC, TSDSI, CDoT and industry & academia stakeholders to facilitate the development of products from India and Standard Essential Patents. The division is envisaged to put forth concerted efforts to coordinate and present technology and substantive issues on international platforms. Facilitation of SMEs and Startups in R&D and related ease of doing business, policy aspects are to be taken up on priority.

2. 5G Standardization

In line with the above objectives the S-R-I division has been driving the TSDSI's Radio Interface Technology (RIT) on 5G standardization (LMLC – Low Mobility Large Cell) at ITU (International Telecommunication Union). The proposal has the potential to enable cost effective 5G infrastructure in rural areas. It has been successfully accepted for consideration as a potential RIT at ITU (clearing step 3) and is under evaluation by the Independent Evaluation Groups for further consideration. Support from other like mind member states has been solicited considering the relevance of the proposal for large and scattered rural areas to enable 5G services in a cost effective manner. The division held several workshops with stakeholders to build domestic support.

3. Engagement with SMEs and Startups

The division has begun building engagement with SMEs and Startups working in DCTs. Considering the need for a simple and effective engagement platform, social messaging platform is actively used for enrolling the stakeholders to bring together to address challenges and explore opportunities. The members of the platform include industry, incubator hubs, aggregators, associations, government departments, academia and other institutions. The

platform has over 200 members and is actively involved in building collaboration among the members.

4. Mapping of Indian competencies

Significant efforts have been put to map Indian competencies and strengths in different domains of DCTs including 5G. A database of Indian companies working in different technology domains is being prepared on ongoing basis. The domains include Mobile network infrastructure, Chipsets (4G / 5G, NBIoTs), Broadband & Broadcast convergence, Satellite products & User terminals, Protocol stacks, Backhaul / cross haul products using Fibre / Radio, Applications, Networking equipment including routers, Antenna systems etc.

SMEs made a Presentation to the Secretary on home-grown competencies

5. Spectrum Policy for R&D and Experimentation

To facilitate R&D and experimentation in Wireless Technologies, a new policy framework on Spectrum for R&D, Manufacturing, Demos, Technology Trials was developed along with WPC wing. The policy enabled R&D spectrum at a cost of Rs. 5000 a year with a minimized transaction cost in obtaining licenses. Spectrum for indoor use for above purposes is through self-declaration and includes import, demo licenses enabling focus on R&D and Manufacturing thus reducing compliance burdens in obtaining licenses.

6. 5G Expert & Standing Committees on Standards

The division facilitated the development of reports from the 5G Committees viz. Participation in international standards platforms, Application Standards as part of the outcomes of 5G high Level Forum. The reports have been submitted to 5G Program office for further consideration.

The division is also supporting the IC division in the work of 5G programme in the activities of trials and inter-ministerial deliberations.

Engagement with South Korean ICT Delegation at Niti Aayog

7. Innovative and efficient use of Spectrum

World over, Spectrum is playing an important role in technology innovation and in the development of wireless products. The division submitted measures and proposals to enhance the efficient use of spectrum in different spectrum bands in sub 1 GHz, Mid-band and Millimeter bands for access and backhaul among stakeholders. Proposals and inputs are provided to the senior management as part of ongoing efforts for inter-ministerial deliberations. The division has also facilitated the work of 5G Standing Committee on Spectrum coordinated by CEWiT (Centre of Excellence in Wireless Technologies) of IIT Madras in making recommendations on 5G spectrum bands.

8. Newsletter

To address the need to have a periodic update on global developments on technology front and the work of Indian companies especially SMEs and Startups in DCTs, a communication initiative has been launched in DoT. A monthly e-Newsletter titled "Technology DOTS" is being published capturing global developments in DCT landscape in Next Generation communication technologies with focus on the work of Indian home-grown companies in new products and R&D including the following.

(i) Products from the home-grown companies

(ii) A brief on core work of some of the home-grown companies

(iii) Global news on DCTs

(iii) New recommendations / standards on international platforms including 3GPP, ITU, ISO, IEEE, Wi-Fi

(iv) Key 5G programme and related 5G news from around the Globe


Technology DoTs

... a glimpse of technology landscape in DCTs

Products of the Month - India

Global News

Emerging Homegrown Tech Companies

(vii) Interesting facts and figures of DCT domain

The inaugural newsletter was unveiled by Hon'ble Minister of Communications on November 8, 2019. The Newsletter is envisaged to apprise internal stakeholders on domestic developments and also updates from global platforms to benefit and provide inputs for internal policy processes.

"India is in the cusp of 'Digital Transformation' and we owe India a digital revolution. Building competencies in Digital Communication Technologies would be a game changer to realize NDCP objectives and transforming India from a user market to supplier market. The Newsletter would surely complement efforts in strengthening synergies across DoT and its units."

- Ravi Shankar Prasad, Minister of Communications

"A continuous update on key international and national developments in Digital Communication Technologies and Standardization is necessary to signal internal actions to build collaboration among stakeholders. The technology brief should strengthen efforts in this direction."

- Sanjay Shamrao Dhotre Minister of State for Communications

2.9 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 Sale 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).

Licence Fee is payable in four quarterly instalments during each financial year. Quarterly instalment 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 Licence Fee paid shall not fall short of Licence 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 licence fee is levied at fixed rates depending upon the number of terminals, channels and / or network capital cost.

2.10 FOREIGN INVESTMENT POLICY & PROMOTION(FIPP)

The Foreign Direct Investment(FDI) and related work was earlier dealt by the Foreign Investment Promotion Board (FIPB) housed in Department of Economic Affairs, Ministry of Finance. In March 2017, the Union Cabinet had decided to abolish the FIPB and transfer the FDI related work to the concerned Administrative Ministry/Department. Accordingly, the Telecom Sector FDI work was transferred to Department of Telecommunications and Foreign Investment Policy and Promotion (FIPP) wing under Department of Telecommunications has been assigned the work to deal with the FDI in Telecom Sector.

2. The Foreign Investment Policy and Promotion (FIPP) wing, broadly, deals with the following work:

- Examination and approval/rejection/closure of the FDI cases relating to the Telecom Services Sector in close co-ordination with the various wings of DoT and other Ministries/ Agencies such as Ministry of Home Affairs (MHA), Department for Promotion of Industry and Internal Trade (DPIIT), Department of Economic Affairs (DEA), Department of Revenue (DoR) Ministry of External Affairs (MEA), Ministry of Corporate Affairs (MoCA), Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), etc.
- Monitoring of compliances of conditions under the FDI approvals pertaining to the Telecom Sector, including the past cases approved by erstwhile Foreign Investment Promotion Board (FIPB).
- All past, present and future litigations and liabilities, in various courts and adjudicatory forums in relation to the FDI approvals pertaining to the Telecom Sector, including the past cases approved by erstwhile FIPB.
- RTI applications and appeals in relation to the FDI approvals pertaining to the Telecom Sector, including the past cases approved by erstwhile FIPB.
- Reviewing on a monthly basis, the Foreign Investment Proposals relating to the Telecom Sector pending with the Department of Telecom.
- To attend the meeting and other Inter- Ministerial Committee (IMC) meeting held under the chairmanship of Secretary, DPIIT and Secretary, DEA on the pendency of FDI proposals relating to the Department of Telecom.
- To maintain the database as per the requirement of DPIIT SoP of the proposals received along with the details such as date of receipt, investor and investee company details, volume of foreign investment involved and date of issue of approval/rejection/closure letter.

- Work relating to the creation of Telecom Finance Corporation (TFC) in compliance of NTP-12 and various parliamentary assurances.
- Other work relating to the Foreign Investment Promotion in Telecom by providing policy inputs/comments and also by organizing conference/stakeholders meetings etc. to attract greater FDI in the sector.

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 RELATION:

The year 2019-20 was marked with several important activities and visits in the sphere of International Relations for DoT.

There were significant activities in multilateral cooperation with Intergovernmental Organizations such as ITU, APT, CTO Intersputnik, ITSO etc. Indian high level delegations visited foreign countries in strengthening the bilateral relations and technological cooperation and several foreign dignitaries also visited India reflecting the growing prominence of India. The activities on International Relations front have been characterized as below.

1. **Bilateral Cooperation**
2. **Activities on Multilateral Cooperation and Conferences of Intergovernmental and International Organizations**
3. **International Exhibitions and Promotion events**
4. **Capacity building programs with ITU/ APT and ITU-T study group meetings**

3.1.1 Bilateral Cooperation:

Visit of High level DoT delegation, led by Secretary(T), DoT, forG2G meetings with Egypt at Cairo, Egypt during April 17-21, 2019: A high level DoT delegation led by Ms. Aruna Sundararajan, IAS, Secretary, Department of Telecommunication visited Egypt from 17-21 April, 2019 for G2G meetings and other possible areas of cooperation between the two countries. Several high-level G2G bilateral meetings were held between the two countries for possible cooperation in the field of telecom technologies, regulation, capacity building, innovation and entrepreneurship.

Highlight of the visit was the meetings with H.E. Dr. Amr Talaat, Minister of Communication and Information Technology, Government of Egypt, in which India's ambassador to Egypt Mr. Rahul Kulshreshtha was also present. During the meeting, it was decided to set-up a Joint Working Group (JWG) to take forward cooperation initiatives between both the countries. The delegation

also had a fruitful meeting with Eng. Khaled El Attar; Vice Minister for Digital Transformation, Govt. of Egypt.

The delegation visited several eminent institutions of telecom in Egypt such as the National Telecom Regulatory Authority (NTRA), Information Technology Industry Development Authority (ITIDA) & Technology Innovation and Entrepreneurship Centre (TIEC) and National Telecommunication Institute (NTI).

Both the countries showed interest for cooperation in various fields of ICT domains:

i. Technology/ R&D cooperation in the field of IOT/ AI/ Block chain/ cyber-security/ M2M applications for agriculture/ Healthcare/ Education segment/ Smart Cities/ financial inclusion/ national database/ citizen registry.

ii. Capacity Building & Training in High-Tech Telecom Areas

iii. Identify potential areas of collaboration in R&D & Innovation for robust start-up ecosystem development in India and Egypt.

iv. Collaboration in standardization between Standards Development Organizations of both countries synergising complementary strengths of both countries. Further Cooperation and collaboration between the two member states on ITU and other International platform on ICT issues of mutual interest keeping in view important upcoming conferences such as Council Meetings, WRC-2019 etc.

v. Other Potential areas of cooperation are: Sharing of Licensing & Regulatory Best Practices, EMR/ EMF regulations, E-Governance/ Internet Governance solutions, Disaster Management, best practices on Spectrum Management.

Both countries decided for setting up a Joint Working Group (JWG) to identify potential areas of cooperation and collaboration on various.

3.1.2 Multilateral Cooperation:

Visit of DoT delegation, led by Advisor (Finance) to participate in the World Summit on the Information Society (WSIS) Forum during April 08-12, 2019: A DoT delegation, led by Shri P.K. Sinha, Advisor (Finance) participated in the ITU WSIS Forum 2019 at ITU Headquarters, Geneva, Switzerland during April 8-11, 2019. Representatives from C-DOT also accompanied the delegation for participation in WSIS and for discussions with the United Nations ICT team regarding UN Way Finding APP development. The delegation held important bilateral meetings on the side-lines of the event regarding future collaborations of India with ITU such as establishment of Area Office and Innovation Centre of ITU in India, hosting of ITU events in India like Regional Development Forum 2019 & WTSA 2020 etc.

ASEAN Telecom Senior Officers Meeting and associated meetings 2019 at Vientiane, Laos during October 22nd – 25th 2019: A DoT delegation, led by Mr. Subodh Kumar Gupta, Director General Telecom along- with officers from Department of Telecommunications, CDOT and Indian Mission in Laos participated in the ASEAN Telecom Senior Officers Meeting and associated meetings 2019 at Vientiane, Laos. During the meetings, the ASEAN India Work Plan 2020 and status of ongoing projects under ASEAN India ICT Dialogue were presented and issues related to the execution with specific help/ interventions required from ASEAN Secretariat/ ASEAN Member States were highlighted/ discussed. The India delegation took the opportunity to hold Bilateral meetings with the delegation from other countries participating in the meeting on the side-lines of the main event.

The meeting endorsed the proposed ASEAN India ICT work plan 2020 which covers:

i. Workshop on Fostering Broadband Access and Connectivity

ii. Establishing National Knowledge Network (NKN) Connectivity with ASEAN Countries to strengthen institutional collaboration for open innovation

iii. Implementation of C-DOT's Location-based Early Warning Mass Messaging Systems for Mitigation of Disaster Situations in ASEAN region (Phase1)

iv. Capacity Building Programmes in the Area of ICTs by NTIPRIT

v. Training Course on Advance Telecom Technologies and Network Security for ASEAN by ALTTC.

ASEAN-TELESOM -ATRC Joint Working Group and Related meetings with Dialogue Partners and ITU: The delegation participated in the main session of TELSOM ATRC JWG + India meeting. Status of ongoing projects were presented in the meeting and issues related to the execution with specific help/ interventions required from ASEAN Secretariat/ AMS were highlighted. The ASEAN India Work Plan 2019 which has been submitted to ASEAN Secretariat for inter sessional approvals was discussed in the meeting. The proposed project of "Digital Village" based on the summit level announcement made by India was discussed in detail. Further, next proposed work plan for 3 years i.e. 2020 to 2022 was also presented for feedback from ASEAN Member States (AMS) and ASEAN Secretariat. The opportunity of presence of delegations from other ASEAN member countries was well used and several bilateral meetings such as Cambodia, Lao PDR, Myanmar, Viet Nam, Indonesia were held on the sidelines.

ITU Telecom World 2019: Indian Embassy organized an economic round table and networking event on September, 12, 2019. Harnessing the opportunities present in sectors of water, power, infrastructure, engineering procurement consultancy, telecom, digital identity and digital payments. Delegations from WAPCOS Ltd., Telecom Regulatory Authority of India, Telecom Dispute Settlement Appellate Tribunal (TDSAT), DoT, and ITU participated in the event.

5th BRICS Communications Ministers' Meeting, 12-14 August 2019, Brazil: An Indian delegation led by Shri Amit Yadav, Joint Secretary(T), DoT participated in 5th BRICS Communications Ministers' Meeting, 12-14 August 2019, Brazil. During the meeting, various engagements have taken placed such as meeting of Working Group on ICT; Business to Business engagements; BRICS Institute of Future Network (BIFN)'s meeting etc. Indian delegation also had bilateral meetings with all other BRICS ministers.

The key decisions of Declaration of this meeting are as follows-

i. Setting up the Digital BRICS Task Force (DBTF) under the Working Group of ICT Cooperation for "BRICS partnership on New Industrial Revolution (Part NIR)"

ii. Adoption of the Terms of Reference of BRICS Institute of Future Network (BIFN)

iii. Committed to improving continuous exchange of ideas and coordination between BRICS members at international multilateral forums.

iv. Setting-up of the BRICS ICT Regulators Forum and further sharing of best practices on regulatory issues and challenges.

v. Committed to develop future joint initiatives in areas of Research, Development and Innovation, Capacity building, skill development and vocational training, Digital Security, Digital infrastructure and access to Information and Communication Technologies.

APT Expert Mission in 2019 for Philippines for Kick-off meeting: A DoT expert group visited Philippines for giving expert consultation to Philippines on "Colocation and Infrastructure Sharing Policies and Regulations"

3.1.3 Capacity Building Programs:

Digital Skills Training (Face to Face) at C-DoT, New Delhi: A four days, face to face training focusing on developing human and technical capacity and empower domestic participants with valuable and practical skills while solving challenges that affect their workplace or their community. There was participation by government agencies, universities and ICT industry.

E-waste Policy Awareness Training: The workshop focused on understanding e-waste in the 3P - People-Planet-Profits dimensions in India through a strategic perspective, linking marquee programmes with ongoing activities of MeitY. The training was held in November, 2019 at Hyderabad with active participation of United Nations University (UNU), ILO, WHO and MeitY.

Participation in training abroad: The DoT officers participated in the capacity building programme abroad organized by the International organisation such as ITU, APT in the following areas:

i. AI & Machine Learning

ii. APT Training Course on Internet of Things (IoT) and Big Data Technologies

iii. APT Training Course on Block Chain Technology

iv. APT Training Course on Sensing, Connection and Applications for Intelligent Internet of Things

v. APT Training Course on Artificial Intelligence and Big Data Analysis

vi. APT Training Course on Security Measures for era of AI

vii. APT Training Course on Development of fundamental network planning for E-application

Training on CYDER (Cyber Defence Exercise): A training on Cyber Defence Exercise was conducted by Japan as an outcome of India-Japan JWG, which was participated by inter-Ministry participants. The training was held during March 2019 at TEC.

3.1.4 MoUs Signed:

Cambodia: A Memorandum of Understanding between The Ministry of Post and Communications of the Kingdom of Cambodia and The Ministry of Communications of the Republic of India on cooperation in the field of communications was signed on 18th March 2019.

MoUs by C-DoT:

a. Ministry of Communications, Ghana: On delivery and implementation of C-DOT's Telecom Solutions and services in Ghana with the support of M/s Telesuprecon

b. Federal Ministry of Communications, Federal Republic of Nigeria: On delivery and implementation of C-DOT's Telecom Solutions and services in Nigeria with the support of M/s Telesuprecon.

3.1.5 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 as an emerging country to develop the ICT eco system and take challenges and issues to this international discussion forum. The DoT delegation participated in the following ITU study meetings in different sectors.

i. ITU-T Study Group 1Rapporteur meeting

ii. ITU-T Study Group 2Rapporteur meeting

iii. ITU-T Study Group 5 meeting

iv. ITU-D Study Group 13 Meeting

v. ITU-T Study Group 15 Meeting

vi. ITU-D Study Group 17 Meeting

vii. ETSI Security Week 2019 meeting

viii. ITU Telecom World 2019

ix. Indo-Africa ICT Expo 2019

x. 3GPP SA3 LI meeting

xi. 22nd meeting of ITSO Advisory Committee

xii. GPP SA #96 meeting

xiii. 3GPP SA6#33 meeting

xiv. GSMA Mobile World Congress 2019

xv. ICANN 64 meeting

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, Telecom Equipment and Services Export Promotion Council (TEPC), Telecommunications Standards Development Society of India (TSDSI), Telecom Centres of Excellence (TCOE India), Exhibitions/Conferences and seminars relating to telecom.

The year 2019-20 was marked by several important activities in field of International Cooperation, which are broadly categories as under: -

(i) High Level Forum for 5G India 2020

The Government led 5G High Level Forum (5G HLF) led by the three Secretaries to the Government of India (Telecom, Department of Science & Technology, Ministry of Electronics & IT) and eminent members from Industry, Academia has been constituted to promote the deployment and use of 5G in India. One of the important learnings and opportunity to India is participation in field trials. The purpose of trials, among others, will be

- Increasing awareness of 5G applications particularly in the new segment of users in the different economic verticals.
- Stimulate local R&D ecosystem (universities, labs and start-ups) to develop innovative applications tailored to Indian needs.

- Help local TSPs better understand technology and business models for 5G.
- Encourage OEMs to better target 5G applications for local needs.

5G Field Trials: Government has allowed all applicants for 5G trials in limited area and for limited time to test potential 5G India specific Use cases based on enhanced Mobile Broadband(eMBB), Massive Machine Type Communications (mMTC) and Ultra Reliable Low Latency Communications (uRLLC) in isolation on non-commercial basis subject to strict safeguards. The participation in trials by any vendor is not linked to deployment of their equipment in Indian Network. Department of Telecommunications has received 16 Applications for 5G field trials using imported as well as indigenous technology. India has showcased 5G applications during India Mobile Congress 2019 and with these field trials; we will bring our start-ups and SMEs to participate in this ecosystem. 5G trials are likely to be started in 2-3 months.

Setting up of 5G Use Case Labs

DoT is also working with different Ministries/Departments for setting up of India specific Use Case labs in Education, Health care, Agriculture, Public safety, FinTech etc. So far, Institute of Development and Research in Banking Technology (IDRBT), an Institute under RBI, in collaboration of Department of Financial Services has come forward for setting up of 5G Use case lab in Banking & Financial Services and Insurance (BFSI). DoT has approved this proposal for setting up of 5G Use Case Lab in Financial Sector at IDRBT with investment of Rs. 22.1 crore with Rs. 17.5 Crore funding by DoT.

(ii) India Mobile Congress 2019

Department of Telecommunications (DoT) along with Cellular Operators Association of India (COAI) organized for the third year India Mobile Congress 2019 (IMC 2019) from 14th - 16th October 2019 at Aerocity, New Delhi. The event was inaugurated by Hon'ble Minister of Communications, Electronics & IT and Law & Justice, Shri Ravi Shankar Prasad and attended by the who's who of the telecom and allied sectors. IMC 2019 saw the participation of more than 50 countries, telecom giants, OEMs, system integrators, technology experts, industry analysts, government officials, young professionals, start-ups and students. IMC 2019 with the theme "IMAGINE: a new CONNECTED world; Intelligent, Immersive, Inventive" witnessed an increased participation with over 75,000 visitors and delegates, 250 global speakers, 300+ exhibitors, 200+ start-ups and a large number of global media persons.

The focus area for IMC 2019 was 5G with more than 10, 5G demos (use cases) showcased over three days. Apart from 5G, other focus areas were smart cities, internet of things (IoT), logistics, automation, data analytics, robotics, cloud/edge computing, artificial intelligence, connected cars, block chain, open source tech, data privacy and cyber security.

To celebrate the spirit of innovation and help the start-ups of today to become the unicorns of tomorrow, IMC in collaboration with AGNIi, Invest India, Start-up India and Nalco, organised a Grand Innovation Challenge to recognise the best innovations by Indian start-ups. Prize money of INR 2 crores was on the line for the top 10 winners in addition to support with using established test beds and innovation labs.

With a view to promote Indian SMEs/start-ups, a key focus for IMC 2019 was the Make in India initiative whereby 73 Indian companies and institutions participated and showcased their products and innovations in emerging technologies, such as 5G. A buyer's sellers meet was organized where Indian companies showcased their products to 150 international telecom buyers, thereby giving our local companies unparalleled exposure and opportunity.

(iii) Telecom Centre of Excellence (TCOE):

TCOE has been created as a PPP initiative by the Department of Telecommunications, Government of India in 2007, 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. Important activities of TCOE during the year 2019-2020 are as under:

Innovation in Mobile Application Development Ecosystem (I-MADE): Innovation in Mobile Application Development Ecosystem (I-MADE) goal is to help Indian colleges digitize their resources and processes to derive better student engagement and help facilitate information access to students on the go. It is also designed to provide students training on different aspects of mobile app development in order to empower institutions and help students turn ideas into revenue-generating companies.

Currently, I-MADE is serving more than 1750 Institutions providing a wide range of products and services to turn their campuses completely digital. In 2019, I-MADE diverse into Enterprise products to cater to wider needs to Indian Institutions.

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. The evaluation group is made of members from Academia, Research labs and Industry across India. TCOE India has been created as a public private partnership initiative by the Department of Telecommunications, Government of India in 2007, 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. Its mission is to create synergy amongst academia, telecom industry and government for creation of new services/applications, generation of IPR, development of manufacturing capability, global telecom standardization activities, and promotion of entrepreneurship. Address technological and managerial challenges faced by Indian Industry in reaching all sections of society through affordable solutions, providing world class services, and having global presence. TCOE India has submitted Interim Evaluation

report to ITU evaluating TSDSI Radio Interface Technology (RIT) in December 2019. TSDSI RIT has passed evaluation criteria (Step3) in December meeting of WP 5D in Geneva. TCOE India has completed final evaluation of TSDSI RIT and uploaded on 12th February 2020 for consideration of ITU-R Working Party 5D during next meeting (#34) of the Working Party 5D from 19-26 February 2020 in Geneva.

(iv) 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 2019-20

TEPC organized various structured promotional events so as to create awareness about the capability of Indian telecom exports. The various promotional activities carried out on a regular basis are product & services specific delegation to selected countries, exclusive Indian TEPC Exhibition, country participation in Specialized Trade Fairs, Catalogue Show, Buyer-Seller Meets, Product Specific Seminars and Conferences - both in India and abroad.

During the year 2019-20, TEPC organized/participated in the following events/ exhibitions in India as well as abroad:

INDIA AFRICA ICT EXPO 2019

The 5th edition of India-Africa ICT Expo took place in Kigali, Rwanda on **August 05-06, 2019**. This event was collaborative effort of Telecom Equipment and Services Export Promotion Council (TEPC) of India, Department of Telecommunications (DoT), Ministry of Communications, Government of India and the Government of Rwanda. This event was also supported / participated by Ministry of Trade and Industry, Rwanda, Rwanda Development Board (RDB), Rwanda Utilities Regulatory Authority (RURA), Rwanda Information Society Authority (RISA), Rwanda Convention Bureau (RCB), ICT Chamber, National Industrial Research and Development Agency (NIRDA) and ICT fraternity. The event was held under the theme "Accelerating Africa's Digital Transformation Agenda".

With a view to explore African market for ICT sector, Shri Amit Yadav, Joint Secretary, Telecom and R. K. Pathak,

DDG(IC) from Government of India along with a 40 business delegates from India attended the Expo.

India Telecom 2019- An Exclusive International Business Expo, 14-16 October 2019 alongside the Make in India Pavilion in India Mobile Congress 2019

India Africa ICT Expo 2019 focused on "India Africa Summit- Accelerating Africa's Digital Transformation and Innovation Agenda", is the largest IT and Telecom Show for convergence of technology and business exchange between Indian and African ICT Companies. More than 60 ICT companies from India and Africa and more than 1000 delegates from 30 countries participated in the Expo.

The India Africa ICT Expo at Rwanda was inaugurated on 5th August, by Hon'ble Prime Minister of Rwanda, Dr. Edouard Ngirente. In the inaugural session, Ms. Paula Ingabire, Minister of ICT and Innovation, Rwanda gave the welcome address. This was followed by address from ministers/ Secretary of three African countries namely Mr Mark Botomani, Hon'ble Minister of Information, Civic Education and Communications Technology, Malawi, Mr. Kazembe Kazembe, Hon'ble Minister of ICT, Postal and Courier Services in Zimbabwe and Mr. Guiguemde Jacques Rodrigue, Director General, Digital Industry Development, Burkina Faso.

India Telecom 2019- An Exclusive International Business Expo, 14-16 October 2019 alongside the Make in India Pavilion in India Mobile Congress 2019

TEPC had also organized India Telecom 2019- An Exclusive International Business Expo, 14-16 October 2019 alongside the Make in India Pavilion in India Mobile Congress 2019. This event is subsidized by Department of Commerce for bringing qualified Buyers from Developing countries. The event was inaugurated by Shri Anshu Prakash, Secretary, Telecom. The event was also attended by Mr. Malcolm Johnson, Deputy Secretary General, ITU.

This platform helped to bring potential buyers from across the globe to interact and finalize business deals after B2B meeting with quality telecom equipment manufacturers and ICT services solution providers from India. Event is leading to development long term business relations. India has established itself as a credible source of software development and is now poised to make an impact as a source of hardware supplies and providing technology solutions. The participants were mix of Government, public and private sectors from India and overseas. Embassies from various countries like Tajikistan, Bangladesh, Vietnam, Zimbabwe etc. had shown cooperation and support to make this event successful.

India has started getting global recognition for telecom equipment exports and many foreign telecom buyers are keen to source telecom products from India. The event had participation of more than 90 buyers from 25+ emerging countries including Afghanistan, Bangladesh, Bhutan, Brazil, Burundi, Egypt, Indonesia, Kenya, Ghana, Mauritius, Mexico, Myanmar, Nepal, Nigeria, Russia, Rwanda, South Africa, Sri Lanka, Sudan, Tajikistan, Uganda, Togo, Turkmenistan, Zimbabwe etc. Further, many countries were represented by their Missions as well. The event witnessed incredible increase in the number of foreign buyers who articipated in the current event as compared to preceding year - an endorsement of the fact that India now produces world-class telecom products.

Participation in Global Exhibition of Services 2019

TEPC with funding support of Department of Telecommunications participated with 20 startups in GES 2019 during 26-28 November 2019 in Bengaluru to promote export of product and services.

Participation in India Bangladesh ICT Dialogue

TEPC with support of Department of Telecommunications participated with 15 companies during 5-8 February 2020 in Dhaka. India delegation had very fruitfull meeting with senior Government official in ICT and Telecom Ministry. They participated in BASIS Soft Expo 2020 during 6-8 February 20202 in Dhaka.

(v) 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 (e.g. 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).

Standardization Activities:

New Technical Reports Published:

Five Technical Reports have been published in the FY till date:

1. Channel Characteristics of 60GHz for 4G/5G Backhaul (TSDSI TR 6004 V1.0.0);
2. Performance Measurements for Dual SIM Devices (TSDSI TR 6003 V1.0.0);
3. Broadcast offload (TSDSI TR 6002 V1.0.0);
4. Information Centric Networking (TSDSI TR 6001 V1.0.0);
5. Study of Existing Models and Gap Analysis for a Broadband PPDR Communication System in India.(TSDSI TR 6000 V1.0.0).

The 3rd Interim Report on Cloud Interoperability and Portability has been submitted to DoT. Use cases from India including Indian Smart Grids are being incorporated in the report.

The total number of standards and reports published in the reporting period are 402 standards (making cumulative 2223 standards) and 5 reports (80 cumulative reports).

Pre-standardization Initiatives:

Technical Workshops:

TSDSI conducted following workshops in the reporting period:

- Spectrum co-existence
- 5G and Cloud for Smart Grids in Indian Context
- Machine Learning in Future Networks

Specific topics discussed in the workshops in these areas are being developed further for taking up as formal technical study items within TSDSI.

Contributions and Engagement in Global Standards Forums

ITU:

- TSDSI continues to champion contributions on IMT2020 standard at ITU.
- TSDSI RIT for IMT2020 (5G) has been accepted for evaluation by ITU-R WP 5D at the Dec 2019 meeting (STEP#3). This is an eight-step process which will be completed by December 2020.
- TSDSI members have been participating regularly in all meetings of the working Party WP 5D, including meetings 32 and 33 in the reporting period (18 total participants from India Delegation)
- TSDSI has transposed 402 3GPP specifications for ITU-R recommendation to IMT M.2012 Revision 4 (IMT Advanced Technologies) and submitted to ITU-R WP 5D.
- TSDSI is supporting DoT in conducting a series of workshops on IMT2020 and evaluation of the RITs.

3GPP:

- Contributions by TSDSI members for 5G enhancements for Coverage and Capacity proposed for 3GPP Release 17 have been accepted at 3GPP.
- TSDSI members are working on these items in parallel.
- 3GPP has accepted NaVIC support as Work Item for 3GPP Rel 16.
- TSDSI members have been participating regularly in 3GPP meetings including the PCG/OP meetings.
- 19 Individual member organizations joined 3GPP through TSDSI in Calendar year 2019.
- 643 representatives from various TSDSI IMs of 3GPP participated in 118 3GPP meetings across the globe and made 232 total contributions in the calendar year 2019.
- The SA6 meeting of 3GGP Was hosted in Hyderabad in January 2020.
- TSDSI has been invited to the Meeting Hosting Study Group formed to come out with a strategy to improve hosting of 3GPP meetings.

oneM2M:

- TSDSI had earlier transposed oneM2M Specifications (17) and Technical Reports (10) corresponding to oneM2M Rel 2. These are currently under consideration by DoT for adoption as National standards for M2M.

- TSDSI hosted the 42nd Technical Plenary meeting along with an Industry Day in Hyderabad in September 2019.
- Four TSDSI members took membership in oneM2M in calendar year 2019.
- TSDSI Member C-DOT has made total 270+ contributions to oneM2M specifications till date, one of the largest by an Indian organization.
- The oneM2M Centre of Excellence setup in IIIT Hyderabad has conducted a course on collection of IoT sensor data at a oneM2M compliant central server for IoT based campus monitoring applications. This is being developed further as a “smart cities living lab”, where researchers and innovators can test their IoT applications.

CHAPTER 4
OFFICES AND FIELD ORGANISATIONS

The functions of offices, including 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.

1. DoT PARTICIPATION IN THE ITU-R MEETINGS OF WORLD RADIOCOMMUNICATION CONFERENCE 2019 (WRC-19) AND CONFERENCE PREPARATORY MEETING (CPM 23-1) FROM 28th OCTOBER TO 26th NOVEMBER 2019

INTRODUCTION

World Radio Communication Conferences (WRC), are held once in four years to review, and, if necessary, revise the Radio regulations, the international treaty which governs the use of the radio-frequency spectrum and the geostationary-satellite and non-geostationary-satellite orbits.

The World Radio Communication Conference 2019 (WRC-19) and associated meeting CPM 23-1 concluded on 26th November 2019 in which 3400 delegates from around 165 Member States signed Final Acts of the Radio Regulations, the international treaty governing the global use of radio-frequency spectrum and satellite orbits.

DoT PARTICIPATION

National Preparatory Committee for WRC-19 carried out studies and detailed deliberations during 2015-19 including various Government departments and private stakeholders to prepare documents which were submitted as India contributions to WRC-19.

To defend these contributions, DoT delegation headed by Member (T) comprising of 4 DoT officers and 7 WPC Wing officers led by Wireless Adviser participated in WRC-19.

KEY OUTCOMES OF WRC-19

WRC-19 identified additional globally harmonized (millimetre wave) frequency bands for International Mobile Telecommunications (IMT), including IMT-2020 (otherwise known as 5G mobile), facilitating diverse usage scenarios for enhanced mobile broadband, massive machine-type communications and ultra-reliable and low-latency communications. This will unlock a host of applications facilitating Intelligent Transport Systems, creating smart cities and making communities more sustainable while allowing for effective climate action, improved health care, sustainable agricultural practices, and greater energy efficiency.

- **Additional bands for IMT** identified in the 24.25-27.5 GHz, 37-43.5 GHz, 45.5-47 GHz, 47.2-48.2 and 66-71 GHz bands, facilitating development of fifth generation (5G) mobile networks. A total of 17.25 GHz was identified for IMT in comparison with 1.9 GHz available before WRC-19.
- **Earth exploration-satellite (EESS) service** – Protection accorded to EESS with the possibility of providing worldwide primary allocation in the frequency band 22.55-23.15 GHz in order to allow its use for satellite tracking, telemetry and control.
- **Non-Geostationary Satellites** – Regulatory procedures established for non-geostationary satellite constellations in the fixed-satellite service, opening the skies to next-generation communication capabilities. Mega-constellations of satellites consisting of hundreds to thousands of spacecraft in low-Earth orbit are becoming a popular solution for global telecommunications, as well as remote sensing, space and upper atmosphere research, meteorology, astronomy, technology demonstration and education.
- Regulatory changes introduced to facilitate rational, efficient and economical use of radio frequencies and associated orbits, including the geostationary-satellite orbit.
- **High-altitude platform stations (HAPS)** – Additional frequency bands Identified for High Altitude Platform Systems – radios on aerial platforms hovering in the stratosphere – to facilitate telecommunications within a wide coverage area below for affordable broadband access in rural and remote areas.
- **WiFi networks** – Regulatory provisions revised to accommodate both indoor and outdoor usage and the growth in demand for wireless access systems, including RLANs for end-user radio connections to public or private core networks, such as WiFi, while limiting their interference into existing satellite services.
- **Railway radio communication systems between train and trackside (RSTT)** – Resolution approved on Railway radio communication systems to facilitate the deployment of railway train and trackside systems to meet the needs of a high-speed railway environment in particular for train radio applications for improved railway traffic control, passenger safety and security for train operations.

- **Intelligent Transport Systems (ITS)** – ITU Recommendation (standard) approved to integrate ICTs in evolving Intelligent Transport Systems (ITS) to connect vehicles, improve traffic management and assist in safer driving.
- **Broadcasting-satellite service (BSS)** – Protection of frequency assignments, providing a priority mechanism for developing countries to regain access to spectrum orbit resources.
- **Global Maritime Distress and Safety System (GMDSS)** – Expanded coverage and enhanced capabilities for GMDSS.
- **Earth stations in motion (ESIM)** – The decision on ESIMs will connect people while in planes, ships, and trains to communication links with geostationary satellites.

CPM 23-1 (STUDY CYCLE 2019-2023)

WRC-19 also decided roadmap for next study cycle 2019-2023 and finalized agenda items for **WRC-23** which are given below:

- **Earth stations in motion (ESIM)** – Conditions to be further defined for communications of ESIMs with non- geostationary space stations in the fixed-satellite service to provide reliable and high-bandwidth Internet services to aircraft, ships and land vehicles.
- **High-altitude IMT base stations (HIBS)** – Possible use of same frequency bands as ground-based IMT base stations on HAPS for extended mobile broadband connectivity to underserved communities and remote areas.
- **Aeronautical mobile applications** – Modernizing aeronautical HF radio, new non-safety aeronautical mobile applications for air-to-air, ground-to-air and air-to-ground communications of aircraft systems, and possible new allocations to the aeronautical mobile satellite service to support aeronautical VHF communications in the Earth-to-space and space-to-Earth directions.
- **Global Maritime Distress and Safety System (GMDSS)** – Improved communications and additional spectrum and satellite resources to enhance maritime capabilities in GMDSS, such as e navigation.

Indian delegation to World Radio Communication Conference-19 (28.10.2019 to 22.11.2019), Sharm El-Sheikh, Egypt comprising officers from WPC Wing led by Shri G.K. Agrawal, Wireless Adviser along with officers from TEC, DoT, ISRO-Department of Space, Ministry of Defence and representatives from telecom industry.

Signing of Final Acts of WRC-19 (22.11.2019, Sharm El-Sheikh, Egypt) led by Shri V.J. Christopher, Joint Wireless Adviser, WPC Wing

2. IMT Auction

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 and the matter is presently under consideration in the Department.

3. Assignment of spectrum to M/s BSNL and M/s MTNL:

The cabinet has approved the assignment of 5+5 MHz of spectrum in the 2100 MHz band to BSNL in all LSAs except for Rajasthan LSA and 5+5 MHz of spectrum in the 800 MHz band in Rajasthan LSA. Cabinet also approved the assignment of 10+10 MHz in the 1800 MHz band in the Delhi LSA and 5+5 MHz in the 2100 MHz band in Mumbai LSA to M/s MTNL.

4. Liberalization and Harmonization of Spectrum:

a. The Harmonization of the 4.4 MHz of spectrum held by M/s Vodafone in the 1800 MHz in the Assam, J&K, Madhya Pradesh, North East and Orissa LSAs was carried out consequent to the liberalization of the same spectrum.

b. The Harmonization of 4.4 MHz spectrum in the 1800 MHz band held by M/s Vodafone Idea and harmonization of the spectrum held by M/s Vodafone Idea in the 2500 MHz band in the various LSAs is also being taken up.

5. Surrender of spectrum:

In the year 2019, the following cases of surrender of spectrum resulted in availability of additional spectrum.

a. Surrender of spectrum by M/s TATA: In the year 2019, the entire administratively assigned spectrum in 800 MHz and 1800 MHz band held by Tata Teleservices Limited (TTSL) was surrendered w.e.f. 18.02.2019 across various service areas. A total of 41.25 MHz (FDD) in the 800 MHz band and 66 MHz (FDD) in the 1800 MHz band was surrendered by M/s Tata.

b. Surrender of spectrum by M/s BSNL: In the year 2019, BSNL has surrendered administratively assigned spectrum in 800 MHz band w.e.f. 10.04.2019 across various service

areas totaling to 37.50 MHz (FDD). BSNL has also surrendered entire administratively assigned spectrum in 1800 MHz band, totaling to 18.8 MHz (FDD) w.e.f. 31.05.2019 across Bihar, Gujarat, Kolkata, Maharashtra and Rajasthan service areas.

c. Surrender of spectrum by M/s MTNL: Surrender of entire administratively assigned spectrum in 1800 MHz band held by MTNL i.e a total of 4.4 MHz, w.e.f. 31.05.2019 across Delhi and Mumbai service areas was also taken into record during the year 2019.

d. M/s Tata and M/s Vodafone has surrendered Access/ Microwave spectrum as part of the rationalization exercise consequent to their merger with M/s Airtel and M/s Idea respectively.

Spectrum so vacated would be made available for the upcoming auctions.

6. Merger of service provider companies:

In the year 2019, M/s Airtel and Tata has requested for the merger of their services across all LSAs, which is under consideration in the Department.

7. Identification of new bands for IMT post (World Radio Conference) WRC - 2019.

The World Radio Conference – 2019 was held at Egypt during Oct – Nov 2019, in which additional candidate bands for IMT were identified, which will be useful for implementing 5G systems in the future. The spectrum in the frequency bands 24.25-27.5 GHz, 37-43.5 GHz, 45.5-47 GHz, 47.2-48.2 and 66-71 GHz has been identified for the deployment of 5G networks. In total, 17.25 GHz of spectrum has been identified for IMT by the Conference, in comparison with 1.9 GHz of bandwidth available before WRC-19.

8. 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. The TRAI recommendations for administrative allotment, among others, were deliberated in the department and the case has been processed for approval of the Digital Communication Commission (erstwhile Telecom Commission).

9. Monitoring assignments to resolve issues due to Jammers, Boosters and Repeaters:

The Telecom Service Providers (TSPs) and COAI has highlighted the issue of illegal jammers/ boosters/repeaters. A meeting was held with the various stakeholders and the matter was taken

up with Customs authorities and E-commerce websites to ensure that the availability of illegal boosters/repeaters / jammers are curbed.

10. Interference to Telecom Service Providers:

Interference cases has been received from M/s Bharti Airtel, Vodafone Idea Ltd, M/s Arya Omnitalk, M/s Reliance Jio and M/s BSNL regarding spectrum interference and the same have been forwarded to Wireless Monitoring Organisation to arrange for radio monitoring in the reported area so that source of interference may be identified and interference may be resolved at the earliest and monitoring reports also have been received to this Ministry after completion of assignments.

11. SACFA Sitting Clearance:

The Standing Advisory Committee on Radio Frequency Allocation (SACFA) grants clearances for fixed wireless stations considering aviation hazard, interference free operations and line of sight obstruction. Site clearances by SACFA are issued without prejudice to applicable bylaws, rules and regulations of local bodies such as Municipal Corporations/Gram Panchayats, etc.

12. Participation of Indian delegations in important international events

WPC Wing, DoT is national nodal agency for ITU (International Telecommunication Union) and APT (Asia Pacific Telecommunity) on all matters related to radio frequency management. Conferences, meetings and discussions at international and regional level (e.g. ITU-R, APT etc.) are managed by Conference section of WPC Wing.

Use of radio frequency spectrum, internationally, is governed by Radio Regulations, which is an international treaty updated by World Radio Communication Conferences (WRC) which recently concluded in November 2019. National positions on radio communication related matters in ITU and APT are decided through established mechanism of National Preparatory Committee (NPC) headed by Wireless Adviser to Government of India which works closely with all concerned ministries as well as other stakeholders viz. industry and academia while drafting national positions.

S. No.	Major milestones of International meetings w.r.t. Radio communication during 2019-20	Number
1	DoT delegations deputed for Radio communication and Spectrum related meetings	12
2	DoT delegates deputed	34
3	Non-DoT delegates included in DoT delegation	64

4	Preparatory Meetings held	15
5	Contribution documents submitted to ITU and APT meetings	29

- **Introduction of Restricted Operators Certificate (ROC)**

- **Notification no. G.S.R 1088(E) dated 5th November 2018-** Introduction of Restricted Operator's Certificate (ROC) will help maritime mobile vessels plying within 30 nautical miles from the Coast Station, to facilitate search and rescue (SAR) operations, for safety of life at sea (SOLAS). Further it will also facilitate small fishing boats/ vessels to participate in SAR operation.

- **Notification for exemption from licensing requirements: Notification No. G.S.R. 996 (E) dated 5th October, 2018:** This will facilitate use of Very Low Power Radio Frequency Devices or Equipments for Inductive Applications (Exemption from Licensing Requirement) Amendment Rules, 2018.

- **Notification No. G.S.R. 1046 (E) dated 18th October, 2018:** This relates to use of Very Low Power Ultra-wideband (UWB) devices (Exemption from Licensing Requirements) Rules, 2018.

- **Notification No. G.S.R. 1047 (E) dated 18th October, 2018:** "This relates to use of Low Power and Very Low Power Short Range Radio Frequency Devices (Exemption from Licensing Requirement) Rules, 2018."

- **Participation of Indian delegation in important International events:**

- **Participation of Indian Delegation in 23rd meeting of APT Wireless Group :** Indian delegation participated in 23rd APT meeting during April 9-13, 2018 at Vietnam 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.

- **Participation of Indian Delegation in Working Party- 6A of ITU-R:** Indian delegation participated in Working Party-6A meeting during April 17-25, 2018 and October 16-24, 2018, in Switzerland on the transition from analogue to digital broadcasting, both sound and television.

- **Inspection of working Radio system in Japan:** Indian delegation participated in Inspection of working Radio system in Japan during May 9-11, 2018 for technical knowhow on implementing the project of high speed train corridor between Ahmedabad and Mumbai.

- **Participation of Indian Delegation in Working Party- 5A& 5B of ITU-R:** The Indian delegation participated in the Working Party-5A meeting at ITU, Geneva during 21st May- 1st June 2018, on equitable access to the radio spectrum by the land mobile and the amateur

services, providing benefits that are made possible by implementing radio solutions to the communication needs.

- **Participation of Indian Delegation in Working Party- 1A,1B & 1C of ITU-R:** The Indian delegation participated in Working Party-1A, 1B & 1C, related to spectrum engineering techniques, Spectrum management methodologies & economic strategies and Spectrum monitoring respectively, in the meeting while during June 4-12, 2018 in Switzerland.

- **RRS 2018 meeting of Asia-Pacific Telecommunity:** The Indian delegation participated in the seminar related to spectrum management as well as the procedures associated with the recording of frequency assignments in the Master International Frequency Register ("MIFR"), during July 23-28, 2018 at Bhutan. The seminar included discussion on Digital Terrestrial Television ("DTT"), Digital Dividend ("DD"), IMT and New Radio Technologies (HAPS, LTE-U).

- **Participation of Indian delegation in Task Group-5/1 of ITU-R:** The Indian delegation participated in the Task Group (TG 5/1) meeting, during August 20-29, 2018 in TG-5/1 at Switzerland, to deal with complex issue of identification of spectrum for International Mobile Telecommunications (IMT) under WRC-19 agenda item 1.13*, "To consider identification of frequency bands for the future development of International Mobile Telecommunications (IMT), including possible additional allocations to the mobile service on a primary basis".*

- **Participation of Indian Delegation in AWG -24 meeting of APT:** The Indian delegation participated in AWG-24 meeting during September 17-21, 2018 at Thailand, on various aspects of emerging wireless systems including IMT/IMT-Advanced to meet the upcoming digital convergence era in the Asia-Pacific region.

- **Participation of Indian Delegation in Working Party- 5D of ITU-R:** The Indian delegation participated in the Working Party-5D during October 9-16, 2018 at Japan, on issues related to the terrestrial component of IMT, including technical, operational and spectrum-related issues to meet the objectives of future IMT systems.

- **Participation of Indian Delegation in 4th Meeting of the APT Conference Preparatory Group for WRC-19:** The Indian delegation participated in 4th Meeting of the APT Conference Preparatory Group for WRC-19 held from 7–12th January 2019 in Busan, Republic of Korea on updation of *Preliminary Views of APT on WRC-19 Agenda Items/issues, APT Views on proposed modification(s) to draft CPM Report, Mechanism for coordinating APT activities during CPM19-2* ***and*** *Provisional objectives and expected outcomes of APG19-5.*

- **Participation of Indian Delegation in Working Party- 5D of ITU-R:** Indian delegation participated in the Working Party-5D during February 11-15, 2019 at Switzerland, on issues related to the terrestrial component of IMT, including technical, operational and spectrum-related issues to meet the objectives of future IMT systems and works closely with Working Party-4C on issues related to the satellite component of IMT.

- **Participation of Indian delegation in ITU-R Conference Preparatory Meeting (CPM)19-2:** The Indian delegation participated in the ITU-R CPM 19-2 during February 18-28, 2019 at Switzerland. CPM 19-2 prepares a consolidated report to be used in support of the work of World Radio communication Conference 2019, based on contributions from administrations, the Radio communication Study Groups and other sources concerning the regulatory, technical, operational and procedural matters to be considered by such conferences.

- **A brief of International meetings w.r.t. Radio communication held during 2019-20 is given below:**

Participation in meeting of Radio Communication Advisory Group (RAG)

The principal duties of the RAG are, inter alia, to review priorities, programmes, operations, financial matters and strategies related to Radio Communication Assemblies, study groups and the preparation of radio communication conferences, and any specific matters as directed by a conference of the Union, a Radio Communication Assembly or the Council. The RAG recommends measures to foster cooperation and coordination with other standards bodies, with the Telecommunication Standardization Sector, the Telecommunication Development Sector and the General Secretariat. The RAG provides advice on these matters to the Director of the Radio Communication Bureau.

- **International Treaty Arbitration, case**

Indian delegation attended International Treaty arbitration case, to protect Indian interest in investment treaty arbitration initiated by the German based investors of M/s Devas Multimedia Pvt Ltd against Govt. of India in Investment Treaty Arbitration at Paris, France

- **Participation of Indian Delegation in Working Party- 5A of ITU-R**

The Working Party 5A is responsible for studies related to the land mobile service, excluding IMT and including wireless access in the fixed service. key objective of WP 5A is to facilitate, through appropriate studies, equitable access to the radio spectrum by the land mobile and the amateur services, providing benefits that are made possible by implementing radio solutions to the communication needs. The WP 5A is also very active in the development and standardization of new technologies for land mobile systems. It also carries study on the amateur services which concern technical and operational characteristics, sharing studies and, when requested, preparation for World Radio Communication Conference agenda items.

- **Participation of Indian Delegation in Working Party- 1A,1B and 1C**

WP- 1A deals with 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. WP-1A studies to identify technical, operational characteristics, develop propagation models and spectrum needs of systems in the land-mobile and fixed services.

WP - 1B deals with Spectrum management methodologies including Spectrum management fundamentals, spectrum management methodology, national spectrum management, national and international regulatory framework, alternative approaches, flexible allocations and long-term strategies for planning. WP-1B carries out studies concerning Wireless Power Transmission (WPT) and possible methods that will assist administrations in managing the unauthorized operation of earth station terminals

WP – 1C deals with 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. Current study topics include: Methods and techniques used in space radio monitoring, Measurement of spectrum occupancy, Spectrum monitoring evolution and Direction finding.

- **Participation of Indian Delegation in 22nd meeting of ITSO, Advisory committee**

Indian delegation participated in 22nd meeting of ITSO Advisory Committee (IAC-22) at Washington DC USA during 30-31 May 2019 to discuss the initial drafts on the studies for future of ITSO agreements.

- **Participation of Indian Delegation in Working Party-4A ITU-R**

Working Party 4 A ITU-R Study Groups and their working parties carry out technical studies concerned with equipment specifications and planning of Radio communication services and thus involved with developing the technical, operational and procedural bases for efficient use of the radio spectrum and the geostationary satellite orbit. The Study Group 4 deals with matters relating to Systems and networks for the Fixed-Satellite Service (FSS), Mobile-Satellite Service (MSS), Broadcasting-Satellite Service (BSS) and Radio Determination-Satellite Service (RDSS). Working party 4A agenda items 1.4, 1.5, 1.6, 7, 9.1 (issues 9.1.2, 9.1.3, 9.1.9) under the mandate of Working Party 4 A besides concerned party for several other agenda items for WRC-19.

- **Participation of Indian Delegation in Working Party- 5D of ITU-R**

WP 5D is responsible for the overall radio system aspects of International Mobile Telecommunications (IMT) systems, comprising the current IMT-2000 systems and IMT-Advanced systems and further for IMT-2020 (5G). WP 5D has the prime responsibility within ITU-R for issues related to the terrestrial component of IMT, including technical, operational and spectrum-related issues to meet the objectives of future IMT systems and works closely with Working Party 4C on issues related to the satellite component of IMT. WP 5D is the lead group for the overall maintenance

of existing, and the development of new, Recommendations on the terrestrial component of IMT. This activity also involves liaison with ITU-T on the network-related standardization activities of IMT and with ITU-D in relation to the application of IMT in developing countries.

- **Participation in Fifth meeting of APT Conference Preparatory Group for WRC-19(APG 19-5) of ITU-R**

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.

- **Participation in 3rd ITU Inter Regional workshop on WRC- 19 preparation of ITU-R**

The Inter Regional Workshop provided a multilateral platform for exchange of information and had significant relevance to the preparatory work for World Radio Communication Conference-2019. Chapters [1-6] of Draft CPM Report containing CPM texts for WRC-19 agenda items related to Land mobile and fixed services (RSTT, ITS, HAPS etc.), Broadband applications in the mobile service (IMT, RLAN, MTC etc.), Satellite services (BSS, ESIM, Q-V Bands), Science Services, Maritime Aeronautical and Amateur Services and General Issues (WPT-EV, Unauthorized ES etc.) were discussed during the Workshop.

- **Participation in the ITU-R meeting of World Radio Communication Conference 2019 (WRC-19) of ITU-R**

- **Participation of Indian Delegation in Conference preparatory meeting (CPM 23-1) of ITU-R**

The first session of CPM-23 held from 25.11.2019 to 26.11.2019 to chalk out work programs of the relevant ITU-R Study Groups for WRC-23, and prepared a draft structure for the CPM Report based on the agenda for the next two WRCs. The roadmap for next study cycle 2019-2023 and finalized agenda items for **WRC-23**.

- **Participation of Indian Delegation in Working Party- 5D of ITU-R**

It may be mentioned that the ITU-R Study Groups and their working parties carry out technical studies concerned with equipment specifications and planning of Radio communication services and thus involved with developing the technical, operational and procedural bases for efficient use of the radio spectrum and the geostationary satellite orbit. WP 5D is responsible for the overall radio system aspects of International Mobile Telecommunications (IMT) systems, comprising the

current IMT-2000 systems and IMT-Advanced systems and further for IMT-2020 (5G).WP 5D has the prime responsibility within ITU-R for issues related to the terrestrial component of IMT, including technical, operational and spectrum-related issues to meet the objectives of future IMT systems and works closely with Working Party 4C on issues related to the satellite component of IMT. WP 5D is the lead group for the overall maintenance of existing, and the development of new, Recommendations on the terrestrial component of IMT. This activity also involves liaison with ITU-T on the network-related standardization activities of IMT and with ITU-D in relation to the application of IMT in developing countries.

Achievements April-2019 to December-2019 and anticipated achievement January-2020 to March-2020		
Acheivements	**Achievements Apr-2019 to December-2019**	**Anticipated achievement January-March- 2020**
1. Radio Frequency Assignment & Related matters		
No. of new Freq. assigned to users	2542	879
No. of Interference cases dealt with	418	157
No. of cases taken up with BR, ITU	0	0
No. of Coordination cases with BR, ITU	0	0
No. of cases referred to Foreign Admn.	0	0
No. of special monitoring programme	0	0
2. Wireless Licenses	**0**	
No. of License schedule issued	88795	30302
No. of License schedule renewed	79598	24651
No. of Import License issued	3277	1135
No. of Import License renewed	8	2
No. of DPL/NDPL issued renewed	155	47
No. of ETA issued	265	78
3. SACFA		
No. of siting cases cleared by SACFA	378493	126555
4. Certificate of Proficiency Examination Licenses		
No. of New COP License issued	2928	906
No. of License renewed	3835	1353
No. of Candidates admitted in Aero/GMDSS Exam	5381	1935
5. Radio Amateur Cell		
No. of New Amateur License issued	653	207
No. of renewal of Amt. Licenses	106	40
Change of location of Station	30	12

No. of Candidateds admitted for Exam	1646	618
No. of Amateur Exam conducted	30	11
6. Wireless Monitoring Activities		
No. of Assignment cleared	10021	3405
No. of Operations identified	81583	27441
No. of Tech. Assistance rendered to users	457	163
No. of infringements communicated to users	6579	1756
No. of channel Hours utilized for Monitoring work	101487	37634
No. of Inspections carried out	20504	6498
No. of Noise F/I measurement done.	91659	29981

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), Ministry of Communications. It is essentially technical in nature and its broad objectives are derived from the international treaty document — *Radio Regulations of the International Telecommunication Union*.

4.2.2 Major functions of Wireless Monitoring Organisation are as under:

BOX 4.1

Major functions of the WMO

- Resolution of the harmful interference;
- Monitoring for 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;
- Monitoring for ensuring adherence to licensing conditions;
- Monitoring / measurements for sharing studies;
- Assistance to domestic wireless users;
- Assistance to foreign administrations;
- Participation in special monitoring campaigns of the International Telecommunication Union;
- 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;
- Inspection of licensed installations; and
- Monitoring of space emissions to protect authorized satellite transmissions.

4.2.3 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 twin 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. Beside the service-aspect of radio monitoring, WMO has to ensure the quality of the spectrum.

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 **01/01/2019 to 30/11/2019** and **anticipated achievements for 01/12/2019 to 31/03/2020** of Monitoring Activities, Satellite Monitoring Activities, Training & Development Activities & Administrative Activities is given below: -

4.2.4 Monitoring Activities: -

- **Enforcement initiative:**

WMO is the nodal agency for providing interference free spectrum to millions of end users. The problem of unauthorized use of mobile signal boosters by general public is adversely affecting the quality of service due to interference to Telecom Service Providers in different Telecom Circles across the country.

Understanding the gravity of this problem, WMO has initiated special Monitoring & Inspection drives in many cities across the country for resolving the interference complaints of Telecom Service Providers. During such special drives unauthorised boosters are being removed by imparting awareness to public about the implications of deploying such boosters. Multi-level Strategy is being implemented by

- Involvement of Police from District Administration.
- Rigorous Monitoring & inspection drives by the Team of WMO officers.
- Involvement of stakeholders such as TSP's (the complainant)) during the special Monitoring & inspection drives.
- Electronic and Print media for spreading awareness.

A mechanism for monitoring and inspection has been initiated 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 TSP's 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 it 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 TSP's.
- 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.

- **Cross-Border Interferences & cellular signal spillage from neighbouring 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 neighbouring 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.

In 2019, WMO was given the task of measuring cellular signal spillage along border areas of country. Detection of foreign cellular networks within India was very challenging task through existing conventional equipment with WMO. At this juncture, innovative software-based applications with supportive hardware were deployed to overcome the challenge of measuring the cellular signal spillage.

During the last one year or so WMO has conducted 94 cellular signal spillage measuring exercises in Punjab, Rajasthan, Gujarat, Himachal Pradesh, Arunachal Pradesh and Union Territory of J&K and Ladakh. The reports have been submitted to the Ministry from time to time.

- **National level spectrum occupancy checks assignments**

During 2019–20, in a special drive under DoT, Wireless Monitoring Organization has successfully executed spectrum monitoring assignments pertaining to different licensed users in the frequency band 450-3600 MHz across the country. WMO has achieved this milestone by executing these assignments through 27 field units in 23 states of India. The purpose of these assignments is to identify the actual usage of spectrum so as to get free spectrum for other upcoming services.

- **High Priority Spectrum Monitoring Assignments**

As much as 7165 high priority interference issues reported by Public Telecom Service Providers have been successfully resolved in various telecom circles of the country. The detail facts and figures on the overall monitoring outcome of WMO is tabulated below:

Table 4.2				
S.No.	**Particulars**	Actual performance during the period from **01.01.2019 to 31.03.2019**	Actual performance during the period from **01.04.2019 to 30.11.2019**	Anticipated performance during the period from **01.12.2019 to 31.03.2020**
1.	Monitoring assignment handled	**3491**	**10021**	**2700**
2.	No. Wireless Transmission monitored	**21708**	**81583**	**17250**
3.	Technical Assistance to users to maintain their operations within specified standards	**62**	**457**	**54**
4.	Infringements communicated to wireless users for remedial actions	**826**	**6355**	**563**
5.	Channel days utilized for Radio Monitoring	**34385**	**111672**	**27000**
6.	No. of Wireless Stations Inspected	**2760**	**20504**	**2100**
7.	No. of Radio Noise Measurements	**24099**	**91659**	**16500**
8.	No. of High priority / Standard interference complaints resolved	**311**	**6925**	**218**
9.	No. of assignment related to national security	**48**	**47**	**19**

Note: - (i) Number of interference complaints to be received by WMO cannot be predicted accurately and depends upon the complainants, i.e., the wireless users only. Hence the number of days anticipated to be utilized and time taken to resolve these complaints are also inter - related to the number of anticipated complaints.

(ii) Number of interference cases resolved depends upon the complaints received by WMO from wireless users/ Telecom Service Providers from time to time.

4.2.5 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.

4.2.6 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 and operationalise the small satellite monitoring facility at WMS Trivandrum and IMS Delhi.

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

a. Detection of TV channels uplinked by Teleport Licensees:

International Satellite Monitoring Earth Station (ISMES), Jalna has carried out monitoring of Teleport Licensees and **intercepted 302 numbers satellite TV channels**; out of which **88 numbers of TV channels were found to be NOT endorsed** in the respective licenses of Teleport licensees. Accordingly, 18 number of Infringement Notices (INF) to the respective Teleport licensees have been issued for violation of unauthorised TV Channels during the period April-November, 2019.

b. 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 35 number of violations to authorised technical paraments have been detected. Accordingly, 9 number** of Infringement Notices (INF) to the respective Teleport licensees for violation of **authorised technical paraments have been issued** during the period April- November, 2019

c. **Special Satellite monitoring carried out i.r.o interference to the ISRO satellites GSAT-6(83E), GSAT-7(74E) and GSAT-17(93.5E) in S-Band uplink of MSS (SxC) payload:** WMO had also carried out study & analysis of the LTE signals signatures using real-time spectrum analyser in the frequency band 2.3-2.4MHz & 2.5-2.69GHz. Four wide band transmission 2300-2310MHz, 2310-2330MHz, 2330-2350 MHz & 2350-2360MHz in 2300 MHZ band has been found and analysed.

   International Satellite Monitoring Earth Station (ISMES) Jalna has carried out the satellite monitoring of the C-band downlink frequencies of Satellite GSAT-6(3681.6MHz, 3684.9MHz, 3688.2MHz 3691.5 & 3694.8MHz); GSAT-7(3695MHz) and GSAT-17 (3691.5MHz & 3698.5MHz), (3665-3700MHz) i.e. corresponding to the MSS S-band Uplink frequencies.

d. **Satellite monitoring carried out by Wireless Monitoring Station (WMS), Trivandrum**

   The entire C-band (3600-4200 MHz) downlinks of the of Satellite IS-20 (68.5 E) was monitored in the month of August, 2019; the satellite GSAT-17 (93.5 E) was monitored in the month of October, 2019; and the entire C-band (3600-4200 MHz) downlinks of the of satellites GSAT-15 (93.5 E) and INSAT-4A (83 E) was monitored in the month of November, 2019.

   The report of Satellite IS-20 (68.5 E) in the C band monitored in the month of August 2019 has been analysed wherein 76 satellite carriers of 14 teleport operators were monitored. It is found that there were total 533 satellite TV channels downlinked by 14 teleport operators. There were 92 satellite TV channels found to be not endorsed in the Wireless Operating License of teleport operators.

e. **Enforcement of previous Infringement Notices (INF) issued to Licensees of satellite-based services: The previous Infringement Notices numbers i.e**. INF-45 to INF-157 issued to **Licensees of satellite-based services**, were analysed and was found that out of 113 INF notices, 33 were related to technical infringement; 70 were related to unauthorised up linking of satellite TV channels and 10 were related to carrier mismatch.

   Some of the teleport licensees had taken corrective action and sent a compliance, however, some had neither taken corrective action nor sent the compliance. Moreover, such teleport licensees had been repeatedly violating the parameters and uplinking unauthorised satellite TV channels.

   In this regard, **6 teleport operators were communicated for taking corrective measures and submit their compliance**.

Satellite Monitoring Facilities in WMO:

Table 4.3
Annual Performance Output of Satellite Moniroting

S.No.	Particulars	Achievements (Apr'19-Dec'19)	Anticipated (Jan'20-Mar'20)
(i)	No. of satellite Monitoring Assignment undertaken	596	70
(ii)	No. of satellite Monitoring assignment cleared	596	70
(iii)	No. of satellite monitored	133	25
(iv)	No. of satellite transponder/carrier monitored	563	110
(v)	No. of satellite carrier identified	819	110
(vi)	No. of high priority satellite interference cases reported & resolve including satellite based public service operators	3	1
(vii)	No. of satellite operation/carrier related Infringement communicated	664	5
(viii)	No. of Channel hours utilized for satellite monitoring work	1914	500
(ix)	No. of satellite Inspection carried out related to satellite operations	---	2
(x)	No. of Infringements issued	31	5

4.2.8 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 nature of training courses conducted during Jan 2019- Mar 2020 covers wide spectrum of diverse areas consisting of Orientation Program for IRRS Group A Officers batch of 2019, Inspection of Licenses & Installations, Enforcement and Relevant Acts, Spectrum Monitoring Capacity building program for fresh batches of Group B Officers, Spectrum Management Software & Website/IT related topics, Training on Satellite Spectrum Monitoring at ISMES, Jalna.

Course on World Radio Conference-19 Recommendations/Resolutions, Training programs on Official Language, Sensitization of Women and SC/ST matters. In a nut shell, WMTDC has proposed 8 training batches in this year (Jan 2019 – Mar 2020) in which 5 training batches have already successfully conducted and remaining are in pipeline. In a nut shell, WMTDC has conducted 5 trainings in this calendar year till date in which 72 Trainees have been trained. It is anticipated that 37 more trainees would be trained till March 2020.

Apart from it, WMTDC has conducted skill development sessions on "**Information and Communication Technologies (ICT)**" and vocational course on "**Wireless technologies and their spectrum management/monitoring**" for undergraduate students. Further, WMTDC has also arranged/handled Technical Visit for probationers'/trainees officers in other Govt. departments such as Controller of Communication Accounts Kerala, Directorate of Coordination Police Wireless Shillong, Police HQ of Trivandrum Kerala, Cyber Dome Trivandrum Kerala, Airport Authority of India & field visits to BTS and teleports for practical exposure of technologies.

The detailed information pertaining to trainings & Technical visits conducted in year 2019-2020 is as following:

Table 4.4
Trainings & Technical visits

Sl. No.	Name of Training Course	Duration & Month	No. of Trainees
1.	Orientation program for Fresh Batch of JWO's (Batch-1)	9 Weeks - Feb 2019	13
2.	Orientation program for Fresh Batch of JWO's (Batch-2)	9 Weeks – Mar-May 2019	12
3.	Hindi Karyashala (Noting & Drafting)	2 Days - May 2019	20
4.	Orientation program for Fresh Batch of JWO's (Batch-3)	9 Weeks - Jul - Sept 2019	13

Table 4.4 Trainings & Technical visits			
Sl. No.	**Name of Training Course**	**Duration & Month**	**No. of Trainees**
5.	Orientation program for Fresh Batch of JWO's (Batch-4)	9 Weeks – Nov 2019– Jan 2020 (In Process)	14
6.	RTR Fresher Course (Batch-1)	4 Weeks – Dec 2019 (Tentatively)	15
7.	RTR Fresher Course (Batch-2)	4 Weeks – Jan 2020 (Tentatively)	15
8.	UPSC ESE 2019 Batch Orientation Programme	Jan 2020 (Tentatively) (New Proposal Drafted)	07
Total No of Officers already Trained and going to be Trained			**109**

4.3 TELECOMMUNICATIONS ENGINEERING CENTRE (TEC)

Telecommunication Engineering Centre (TEC), the technical arm of DOT is an ISO 9001:2015 organization and it plays very important role in the telecom ecosystem of India. TEC is responsible for the development of technological standards for telecom equipment. TEC is led by Advisor (TEC), as head of the institution and 19 divisions in TEC handle various functions pertaining to Transmission, Next Generation Network, Smart Network, Telecom Security, M2M/ IoT, Green Passport and various other aspects of Future Technology Networks.

TEC provides technical support to DOT and other government departments and formulates technical specifications in the form of standards of various telecommunication technologies viz. Generic Requirements (GR), Interface Requirements (IR), Technical Requirements (TRs), Service Requirements (SR), Standards, and Essential Requirements (ERs) for telecom equipments, networks, systems and services to be deployed in Indian Telecom Network, in harmony with International Standards after wide stakeholder consultations. During formulation of above mentioned documents, 'Test Schedule Test Procedure' (TSTP) is 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 by TEC region wise, 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 certificates i.e. Interface Approval Certificate (IAC) against TEC IRs, Type Approval Certificate (TAC) against TEC GRs, Technology Approval Certificate against TEC GRs and Certificate of Approval (CoA) against Applicant's own specifications. TEC also issues Mandatory

Conformance Certificate against Essential Requirements, under Mandatory Testing & Certification of Telecom Equipment (MTCTE) Scheme.

The Indian Telegraph (Amendment) Rules, 2017, provides that every telecom equipment must undergo prior mandatory testing and certification. According to this amendment, every telecom equipment 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, shall have to undego prior mandatory testing 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 currently handling following other major activities also:

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/ equipments 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/SRs 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.

Achievements during Financial Year 2019-20:

- **Works carried out during 2019-20:**

- Policy has been formulated for ratification/adoption of TSDSI (Indian SDO)/other standards which outlines the institutional and policy framework alongwith the process of adoption of Standards.
- Technical Report on "Design and Planning of Smart Cities with IoT/ICT" was released by Hon'ble MoSC (I/C) in a Conference in TEC, Jan 2019.
- Technical Evaluation of 21 cases of CAB Designation (from April 2019 till date) related to standadrs on EMC, Safety, Wi-Fi/RLAN, Environmental, SAR and calibration of EMF measuring instrument carried out.
- Evaluation of SIP based voice calling over Wi-Fi platform of CDoT carried out
- Report of the committee on "SAR limits from RF devices used in close proximity to human body" has been finalized after circulation of consutation paper and inviting inputs from stakeholders on the same.
- Report of the committee for formulation of technical specifications for 'Pilot Project for Continous Monitoring of EMF' has been finalized
- A committee constituted by TEC for Adoption of oneM2M Rel-2 specifications, transposed by TSDSI, as National Standard has finalized its report which is now submitted for final approval.
- A proposal to set up a National Accreditation Board for Telecom and ICT containing its scope, organization structure, human resource requirements, funding requirements, bussiness model etc. has been finalized and is in the final stages of approval.
- Allotment of ISP (International Signalling Point) codes done in coordination with ITU-T.
- National DNS Performance Study carried out in association with BSNL.
- The agreement between TEC and IEEE for adoption of IEEE standards as national Standards is under process of approval.
- MOU signed between TEC and CEERI Pilani to initiate collaborative action between two organization
- General MoU of Cooperation between TEC and IEEE is under process of approval.

- TEC participated in Apex Committee meetings to examine proposals to offer telecom and networking services using IT & IP equipment.

- **The following New Generic Requirements (GRs)/Interface Requirements (IRs)/Essential Requirements (ERs) have been issued during 2019-20:-**

  i. GR on IDMS using CAP

  ii. GR on NTP Server

  iii. GR on Primary Reference Clock

  iv. GR on Optical Time Domain Reflectometer (Mini i.e.Portable)

  v. GR on OTDR (Type-I) for 1310 & 1550 nm wavelength for long Haul Application.

  vi. GR on NGPON2

  vii. IR on IFMC Services.

  viii. IR on "Point of Sales (PoS) devices with Wireless/Wireline interfaces"

  ix. ER on Feedback devices with cellular and LoRa connectivity

  x. ER on Smart Devices

  xi. ER on SHDSL

  xii. ER on UTM, Firewell, Protection System and Intrusion.

  xiii. ER on PTP Grand Master (GM)

- **The following Generic Requirements (GRs)/Interface Requirements (IRs) have been revised during 2019-20: -**

  i. GR on Stablised Light Source.

  ii. GR on VRLA batteries for high rate of discharge (UPS)application

  iii. GR on Single Pair High Bit Rate Digital Subscriber (SHDSL) System.

  iv. GR on HDPE telecom Ducts for use as underground optical fibre cable.

  v. GR on Double Walled Corrugated (DWC) HDPE Duct.

  vi. GR on FTTH/FTTB/FTTC Braodband Access Applications using EPON Technology.

  vii. GR on Micro Duct for FTTH Applications.

  viii. GR on Power System based on renewable energy for Telecom equipments.

  ix. GR on Optical Multi Services Access Network (OMSAN).

- **The following Generic Requirements (GRs) have been amended during 2019-20:-**

  i. GR on Raw Material for Manufacturing of optical Fibre Cable.

  ii. GR on Riser Optical Fiber Cable (For indoor Application)

- **New Test Schedule and Test Procedure (TSTPs) completed during 2019-20:-**

  i. TSTP on Software Defined Wide Area Network solution.

  ii. TSTP on Multi-function portable device for biometric authentication/e KYC, digital KYC and Bill payment at POS.

- **Study Papers/white papers/technical reports released during 2019-20:-**

  i. 5G Transport

  ii. Millimeter wave transmission systems for 5G

  iii. Free Space optics

- **Project Activity:**

- Process for Certification of Telecommunication Equipment under MTCTE is being managed and administered through online portal called MTCTE portal. MTCTE is being rolled out in phased manner. Under phase-I of MTCTE, mandatory testing of 13 telecom equipments under 6 ERs is implemented w.e.f 1st Oct, 19. 58 companies are currently registered on MTCTE portal for certification of their telecom equipments. 72 applications for certification of telecom equipment have been submitted so far, and 62 certificates have been issued.

- **Establishment of Control Lab:** Equipment for Control Lab is installed and Testing shall start shortly.

- **Other Significant Activities:**

- **Essential Requirements (ERs) of M2M/IoT Devices:** Internet of Things division in TEC is established with the objective of framing GR / IR on new Telecom Services. At present this unit is working on Machine to Machine (M2M) communications and other new services areas. ERs of smart devices, viz. Tracking device, Feedback device, Smart security camera, Smart electricity meter, Smart watch and IoT Gateway, to be connected directly to PSTN/ PLMN (cellular, broadband) have been prepared, approved and uploaded on MTCTE portal. ERs of smart devices to be connected via Gateway on communication technologies such as LoRa, Sigfox, ZigBee, PLC, RF Mesh, 6LoWPAN, BLE, Wi-Fi etc. have also been prepared.

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

Functions:

- 2 Meetings of NSG-5 corresponding to ITU-SG-5 were organized wherein contributions related of EMF exposure considerations and co-ordination in shared site scenario were deliberated.
- 3 Meetings of NSG-5 corresponding to ITU-R SG-were 5 were organized wherein contributions related to industrial applications of 5G, MT experiences and 5G based public safety were deliberated.
- NWG-12 meeting for ITU-T SG12 (Performance, QoS & QoE) was held in TEC on 5th July, 2019.
- National Working Group -15 meeting was conducted and various contributions were prepared, got approved and submitted to ITU-T SG-15 meeting held at Geneva during July 2019.
- The 1st meeting of National Working Group (NWG-16) corresponding to ITU-T Study Group-16 (Multimedia Coding, Systems & Application), for the current study period 2017-2020 was held on 27-09-2019 in TEC, New Delhi.
- TEC participated and contributed in ITU-T SG-13 meeting held from 17-28 June 2019.
- A contribution paper on "Ethical issues in AI for Health" was submitted and presented to ITU-T FG-AI4H during its meeting on 13-10-2019 at NICF, Delhi.
- TEC participated in ITU-T SG-20 meeting at Geneva in Dec. 2019 wherein "Use cases on Smart Cities and Communities" were converted into ITU Standards.
- A contribution as problem statement, for End to End Product Cycle Management of IOT devices was submitted and presented in first meeting (11-13 December, 2019) of the Focus Group on Environmental Efficiency for AI and other new Technologies.
- Working Group (WG-PR4) was formed for giving recommendations on "Policy framework for promoting and incentivizing deployment of Solar and Green Energy for Telecom Towers".

Workshops:

- Access Lab (AL) Division has planned to organise a series of Workshops on Acess Lab Technologies in TEC.
  - o First Workshop in the series was conducted alongwith a live demonstration of testing on 26th July 2019 in TEC in association with OEM M/s Spirent & M/s Anristu. Workshop covered topics such as "Conformance Testing for Telecom Devices, Radio Frequency Testing and 5G Preparation" and Technical solution for testing of PCT/RFCT/Traking 5G, BSC/BTS, SIM/USIM, AUDIO, IOT, RF Chamber, Wifi, LBS, CDMA, Wifi, IoT & M2M.

Workshop on Access LAB technologies

o Second workshop in the series was conducted on 11th December 2019 in TEC in association with OEM Rhodes & Schwarz. Workshop provided the exposure of conformance testing of Base Station and WLAN and testing solution for RF, RRM, PCT, LBS for user quipment (2G, 3G, 4G and 5G).

- **Webinars/Training Programmes:**

- 2 days training programmes on IoT & 5G were designed, provisioned and managed by TEC for ITI executives in Bangalore in March 2019 and in Rai Bareli in July 2019.
- Webinar on one M2M by expert from EU was organized on 31st May 2019.
- Webinar on oneM2M by Mr. Dale Seed, InterDigital Inc. USA, was held on 10th June 2019.
- One-day Workshop/Training on M2M having speakers from India and abroad with real time transmission globally was held in TEC, New Delhi on 24th June 2019.
- Interaction with Telecom Equipment manufacturers is held by TEC at regular intervals.

Interaction with Telecom equipment manufacturers

- One-day training Programme on “IoT Standardization: one M2M and OCF was held in TEC New delhi on 5th August 2019.

Inauguration of IoT Experience Centre

- Workshop on GeM is conducted by TEC for its officers on a regular basis.

Workshop by GeM executives for TEC officers

- TEC holds regular interaction and workshops with Industry stakeholders including Telecom OEMs, Research Professionals, Standardization bodies, Regulatory and Law Enforcement Bodies etc.

Consultation with stakeholders in TEC Conference Room

- **Testing & Certification by Regional Centres of TEC (RTEC) during 2019-20: -**
  - Interface Approval : 36
  - Type Approval : 04
  - Technology Approval : 02
  - Revenue : Rs. 79,44,553 /-

4.4 UNIVERSAL SERVICE OBLIGATION FUND (USOF)

4.4.1 Organizational Structure

The Universal Service Obligation Fund, formed by an 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 Telecom, Ministry of Communications.

4.4.2 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 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.

4.4.3 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.

4.4.4 Functions & 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. As per the Rules, the following services shall be supported by the Fund: -

I. Stream-I: Provision of Public Telecom and Information Services.

II. Stream-II: Provision of household telephones in rural and remote areas as determined by the Central Government from time to time.

III. Stream-III: Creation of infrastructure for provision of Mobile Services in rural and remote areas.

IV. Stream-IV: Provision of Broadband connectivity to villages in a phased manner.

V. Stream-V: Creation of general infrastructure in rural and remote areas for development of telecommunication facilities.

VI. Stream-VI: Induction of new technological developments in the telecom sector 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.

Major schemes/Projects funded from USOF.

4.4.5 BharatNet: -

BharatNet, one of the biggest rural broadband 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 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. The Cabinet has approved the project at an estimated cost of Rs. 42,068 crore and as of January 2020, Rs. 22389.25 crore has been disbursed by the USOF.

As on 24.01.2020, by laying 4,08,926 km Optical Fibre Cable (OFC), a total of 1,46,717 GPs have been connected, out of which 1,32,993 Gram Panchayats (GPs) have been made Service Ready. In addition, 1255 GPs have been provided connectivity through satellite media. A total of 1,34,248 Gram Panchayats (GPs) have been made Service Ready.

As part of this flagship project, the Last Mile connectivity, through Wi-Fi or any other suitable broadband technology to access broadband /internet services, is also provisioned in all the GPs in the country. As on 24.01.2020, Wi-Fi hotspots have been installed at 45,769 GPs and out of them, services are being provided in 18,037 GPs.

4.4.6 Comprehensive Telecom Development Plan (CTDP) for the North-Eastern Region: On 10.09.2014, the Union Cabinet approved a proposal to implement a 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. The initial estimated cost of implementation was Rs. 5336.18 crores. As the two tenders for Meghalaya were not successful therefore on 23.05.2018 cabinet has approved revised proposal for provision of 2G+4G based mobile services in Meghalaya and revised estimated cost for CTDP NER to amount of Rs 8120.81 Cr to be funded from Universal Service Obligation Fund (USOF).

The present status is as under

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

Agreement signed on 16.01.2018 with BSNL for provision of 2G based mobile services in Arunachal Pradesh and 2 Districts of Assam was reviewed in NITI Aayog. In view of the decision taken to give the latest technology to the people, DCC has approved a proposal for provision of 4G connectivity in Arunachal Pradesh and 2 Districts of Assam on 19.09.2019. Further, draft Cabinet note is under submission. The estimated cost of the proposal is Rs.

2536 Crore.

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

As part of the Comprehensive Telecom Development Plan (CTDP) for the NER, Mobile Services are being provided in the uncovered villages and along National Highway in Assam (except 2 Districts), Sikkim, Manipur, Mizoram, Nagaland, Tripura and Arunachal Pradesh (NH only) through M/s Bharti Airtel Limited & Bharti Hexacom Limited by setting up 2004 towers. Telecom Commission approved the project on 08.09.2017 at a cost of Rs 1656 crore and the Agreements were signed on 08.12.2017. As of 22.10.2019, total of 878 towers have been installed and 732 towers are radiating.

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

Earlier 2 tenders for Meghalaya were not successful. Therefore, proposal to install 2173 towers of 2G-4G technology for providing mobile services in 2374 uncovered villages and along National Highways for an estimated cost Rs. 3911 Cr has been approved by Cabinet on 23.05.2018. In the meantime, DoT LSA units provided new list of 2691 number of uncovered villages of Meghalaya. In view of the decision taken in NITI Aayog, DCC approved a proposal for provision of 4G connectivity in Meghalaya on 19.09.2019. In the meantime, revised list of 1164 uncovered villages has been received from DoT, wherein has further reduced the cost to Rs. 1165.54 Cr. Accordingly, DPR/Tender documents is under finalization.

4.4.7 Implementation of Comprehensive Telecom Development Plan for Islands:

A. Andaman & Nicobar Islands: -

Submarine OFC Connectivity between Mainland India (Chennai) and Port Blair and 7 other Andaman & Nicobar Islands:

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:

Submarine OFC Connectivity between Mainland India (Chennai) and Andaman & Nicobar Islands: On 21.09.2016, Cabinet approved the project provision of Submarine Optical Fibre Cable Connectivity Project between Mainland (Chennai) and Port Blair and Five Other Islands Car Nicobar, Little Andaman, Havelock, Kamorta and Great Nicobar island. Subsequently it has been decided to connect Rangat Island via Long Island from Havelock Island also on

Submarine OFC in addition to six Islands already approved by the Cabinet. As per Cabinet approval, BSNL has been nominated as the Project Execution Agency for implementation of the project while TCIL has been nominated as the Technical Consultant. BSNL floated the Global tender on 07.07.2017 for Design, Engineering, Planning, Supply and Implementation (including management and coordination) of the Submarine Cable System between mainland Chennai and A&N Islands and the tender was opened on 06.02.2018. BSNL observed that a single responsive bid by M/s NEC Technologies India Pvt Ltd. was received in global and transparent tender which was evaluated. The total financial implication of Rs.1224 crore including CAPEX & OPEX for five years has been approved by the Telecom Commission in its 49th meeting held on dated 1st May 2018. Permit-In-Principle(PIP) issued to BSNL on 07.06.2018. Purchase Order(PO) issued by BSNL to NEC on 26.06.2018. Hon. Prime Minister has laid foundation stone of the project on 30.12.2018 at Port Blair. The project is targeted to be completed within 24 months from the date of award of work. i.e. by June, 2020.

EIA/CRZ& other statutory clearance obtained building construction work for cable landing station are under completion stage. Marine and land cable survey completed. BSNL has finalized survey report and bill of quantity (BOQ) of marine and land cable. NEC has supplied equipment except for Hutbay. Installation activities are scheduled to commence from December 2019.

Satellite bandwidth Augmentation for Andaman & Nicobar Islands: Under this scheme, satellite bandwidth is to be augmented from 260 Mbps to 1 Gbps. The work has been awarded to BSNL on nomination basis. CAPEX of Rs.80.98 crore is to be funded by USOF while OPEX/ transponder charges @ Rs.161.424 Cr per annum, are to be funded by Andaman & Nicobar UT Administration/MHA. Bandwidth augmentation has been completed by BSNL. Telecom Commission has approved satellite bandwidth augmentation from 1 Gbps to 2 Gbps on 21.12.2017 by BSNL on nomination basis. CAPEX Rs. 42.24 core + applicable taxes to be funded by USOF. OPEX is to be funded by MHA. Bandwidth augmentation has been completed by BSNL.As per DCC approval on 13.06.2019 work awarded to BSNL on nomination basis with Capex of Rs. 36.23 crore. Tender floated by BSNL. Target is March 2020. Additionally, ISRO has provided 27 user terminals on loan to BSNL. Bandwidth is enhanced with this commissioning; total bandwidth capacity is augmented to 3.49 Gbps.

Provision of Mobile connectivity to uncovered villages and seamless mobile coverage along NH 223 in Andaman &Nicobar Islands: Under this scheme, 125 towers are to be set up to provide mobile Coverage in 144 uncovered villages with population >=10 while additional 42 towers are to be set up for seamless mobile coverage of entire 129 km of NH223 including 80 km falling within Jarawa Tribal Reserve Belt. The Telecom Commission, on 09.01.2018 has approved CAPEX of Rs.342.40 Crore. Work is to be awarded through competitive bidding process. Andaman Nicobar Union Territory Administration conveyed that in place of 2G,4G should be deployed.

The earlier tender floated for selection of implementing agency to provide mobile connectivity through 167 BTS in 144 uncovered villages and along Highway was cancelled. TCIL submitted DPR based on 4G technology on 16.09. 2019.Committee formed to examine DPR submitted its report on 7.10.2019. TCIL has been asked to submit revised DPR with 4G technology, as per recommendation of the committee.

Submarine OFC Connectivity between Mainland India(Kochi) and Lakshadweep Islands: Under this scheme, submarine OFC connectivity has been proposed between Mainland(Kochi) and 11 Lakshadweep Islands with 1989 Kms. of Submarine OFC cable as per DPR submitted by TCIL viz. Kavaratti, Kalpeni, Agatti, Amini, Androth, Minicoy, Bangaram, Bitra, Chetlat, Kiltan and Kadmath. Future bandwidth requirement of 7.56 Gbps forecasted by TRAI for backhaul shall be met under this project. The estimated expenditure of Rs. 1344 Crore has been projected in the DPR submitted by TCIL (CAPEX-1030 & OPEX- 314 Cr). DCC note to be put up for approval.

Satellite bandwidth Augmentation for Lakshadweep Islands: Under this scheme, the work awarded to BSNL on nomination basis with estimated CAPEX of Rs.46.53 Crore to be funded by USO Fund while OPEX/transponder charges are to be funded by Lakshadweep UT Administration/MHA. The work of satellite bandwidth augmentation from 102 Mbps to 318 Mbps has been completed. Further, the work of Satellite bandwidth augmentation from 318 Mbps to 1.71 Gbps (CAPEX- 25.75 Crore and OPEX- to be paid by MHA/UT administration) has been awarded to BSNL on nomination basis. Ground based Equipment is being procured. Tender refloated by BSNL on 2nd September 2019. The project is targeted to be implemented by December 2019.

Augmentation of 2G Mobile Coverage with EDGE Technology in Lakshadweep Islands. Under this scheme, 10 new Towers/BTSs were to be set up to improve the quality of service as per TRAI recommendations. The work had been awarded to BSNL on nomination basis. The CAPEX of Rs.10.1 Crore is to be funded by USO Fund. The project has been completed in May, 2018.

4.4.8 Mobile Service in Uncovered Villages:

i. 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.

ii. Government of India has planned to provide mobile coverage in inhabited and uncovered villages of the Country in a phased manner. For these project the scope, specification & implementation strategy is being finalized. After obtaining the approval from the competent forum the project will be implemented as per the implementing strategy and availability.

iii. Scheme for Provision of Mobile Services in 354 Uncovered Villages as part of uncovered villages Project" is under process. Through this scheme villages of Jammu &Kashmir and Ladakh region, Himachal Pradesh and MHA identified villages will be covered among others.

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

LWE Phase-I: On 20.08.2014, the Cabinet approved the implementation of a project at a cost of Rs. 3567.58 crores (inclusive of all taxes except octroi and local taxes), discovered by BSNL through a bidding process to provide Mobile Services in 2199 locations [1836 new sites & 363 sites already installed by BSNL] in the Left Wing Extremism (LWE) affected areas in the States of Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Maharashtra, Madhya Pradesh, Odisha, Telangana, Uttar Pradesh and West Bengal, to be funded by Universal Service Obligation Fund (USOF). The project was executed by Bharat Sanchar Nigam Limited (BSNL). The Agreement between USOF and BSNL was signed on 30.09.2014.

In addition to the above, the Ministry of Home Affairs identified 156 locations for provision of mobile services in LWE affected areas. The Department of Telecommunication approved provision of mobile services at 156 locations at an estimated cost of Rs 272.40 Crore in June 2016.

State wise status of LWE Phase I schemes is given in the following table.

Table 4.5
State wise status of LWE Phase I schemes

S. No.	State	No. of Total Locations identified by MHA	Additional 156 Sites	Total sites Under LWE Phase I	Radiating
1.	Andhra Pradesh	54	8	62	62
2.	Bihar	184	66	250	250
3.	Chhattisgarh	497	35	532	525
4.	Jharkhand	782	34	816	816
5.	Maharashtra	60	5	65	65
6.	Madhya Pradesh	22	0	22	22
7.	Odisha	253	8	261	256
8.	Telangana	173	0	173	173
9.	Uttar Pradesh	78	0	78	78
10.	West Bengal	96	0	96	96
	Total	2,199	156	2355	2343

DoT approved enhancement of VSAT bandwidth from 512 kbps to 1024 Kbps on 198 sites of LWE Phase I scheme in July 2017. Further, Telecom Commission in its meeting of 21st December 2017 recommended enhancement of VSAT bandwidth to 2 Mbps at all sites on VSAT under LWE Phase-I at the cost of 89 Crore. VSAT bandwidth has been enhanced to 2 Mbps at 375 sites.

LWE Phase II: Cabinet has approved on 23 May 2018 the proposal of installing 4072 mobile towers at location identified by MHA in LWE affected areas with subsidy support of Rs. 7330 Crore (Excluding taxes) from USOF. The roll-out period is 18 months from the date of signing of contract with implementing agencies. Revised 3465 no of towers at the cost of Rs. 5024 Cr. have been approved by DCC. As per direction of MHA, coverage status of MHA identified sites is being carried out after that RFP will be processed for floating.

Proposal for uncovered villages as per MHA list/Priority cases and Ladakh & Kargil in J&K region has been approved by DCC. Draft RFP is under process.

I. Ministry of Home Affair (MHA) provided a list of 4072 locations for provision of mobile services in LWE affected areas on 27th Oct 2017.

State wise list of number of mobile towers in LWE areas under LWE Phase II:

Table 4.6
State wise list of number of mobile towers in LWE areas under LWE Phase II

S No.	State	No of Districts	No. of Mobile Towers	Revised No. of Mobile Towers
1	Andhra Pradesh	8	429	427
2	Bihar	8	412	106
3	Chhattisgarh	16	1028	1028
4	Jharkhand	21	1054	1008
5	Madhya Pradesh	1	26	36
6	Maharashtra	2	136	104
7	Odisha	18	483	252
8	Telangana	14	118	118
9	Uttar Pradesh	3	179	179
10	West Bengal	5	207	207
	Total	**96**	**4072**	**3465**

4.4.10 STATUS OF USO FUND:

Universal Access Levy (AL) amounting to Rs. 101307.72 Crore has been collected and the total allotment amounting to Rs. 49981.69 Crore received though Parliamentary approvals has been utilized to fulfil the object of USO Fund. The balance of UAL amount available as potential fund under USO at the end of September, 2019 is Rs. 51326.02 Crore.

The detail of subsidy disbursed under Universal Service Obligation Fund during the FY 2018-19 & current financial year:

Table 4.7

	Amount Disbursed during 2018-19	Amount Disbursed in Current year 2019-20 (up to September 2019).
Amount Disbursed under USOF subsidy	4788.22	884.21

4.5 NATIONAL CENTRE FOR COMMUNICATION SECURITY (NCCS)

National Centre for Communication Security (NCCS) – a centre under Department of Telecommunications is created, with headquarters at Bengaluru, for the purpose of establishing security testing and certification within the country.

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.

4.5.1 Objective: The objective of NCCS is to establish and operationalise a framework of security testing and certification framework within the country. Presently, there are three verticals under NCCS as follows: -

(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.

(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)

NOCC is headed by an SAG level officer who is assisted by one or more JAG level officers. The offices of NOCC are located in Delhi, Gurugram and Sikandrabad.

NOCC monitors and controls parameters of carriers uplink from 1534 Satellite Earth Stations/ Teleports/DSNG & more than 2,70,000 VSATs. NOCC has made endeavours to provide the interference free environment to the various satellite users in country and NOCC provides mandatory clearances with in three working days to applicant agencies.

The Network Operations Control Center (NOCC) performs important functions of enforcement and regulatory. Broadly its functions are as follows:

- Online operational control, coordination and monitoring of all the satellite based services (Like VSAT applications, Broadcasting, DTH, ISP etc.) in India on Indian and foreign satellites.
- Handling contingency operations in case of failure of transponders/satellites.
- Providing RF Interference solutions and coordinating with different satellite administration for the resolution of the interference problem(s)
- Mandatory Performance Verifications Testing of all the ground segment satellite earth station antennae for conforming to latest ITU/TEC standards before permitting them to put in operations.
- Testing of ISP satellite Gateways & monitoring of transmissions from these gateways.
- Testing & clearance of Teleports of TV broadcaster(s) and Direct to Home (DTH) service providers

- Testing and clearance of Digital News gathering (DSNG) vans used for live gathering
- Testing of satellite transponder before accepting for operations
- Spot frequency allocations and carrier plan approval to all the INSAT users and foreign satellite users for broadcasting/ DTH/ DSNG, NLD and ILD services (VSAT).
- Verification/ Implementation of license conditions as and when called upon by Licensing cell of DoT.

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 36 Satellites Viz. INSAT- 3A, 3C, 48R, 4A, 4B, 4CR, GSAT-8, GSAT-10, GSAT-12, GSAT-14, GSAT-15, GSAT-16, GSAT-17, GSAT-18, GSAT-31, Measat-3, 3B, SES-7, SES-8, SES-9, ST2, IS-17, IS-20, IS-902, IS-906, IS-39, NSS-6, NSS-11, NSS-12, Asisasat-4, 5, 7, Chinasat-12, Thaicom-4, 5 and APSTAR-7. NOCC, in the year 2019-20 issued 165 uplinking permission and 68 frequency plan approvals to various applicant agencies.

NOCC, in year 2019-20, monitored and controlled various transmission parameters of carrier uplink from 1534 Satellite Earth Stations/Teleports/DSNG & more than 2,65,000 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 year 2019-20, NOCC carried out mandatory performance verification testing tests of 60 antennae of different type of satellite earth stations and DSNG before inducting them into network.

In year 2019-20, NOCC has issued 76 nos. 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: In the year 2019-20, NOCC has billed Rs. 52.3 crore for the services rendered by NOCC to the various user agencies and more than Rs. 14 lakh for uplink permissions for live telecast of events of national and international importance.

4.7 NATIONAL TELECOMMUNICATIONS INSTITUTE FOR POLICY RESEARCH, INNOVATION & 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. Detail activities are in Chapter-7 under Training.

4.8 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. The NICF is headed by an HAG level officer, i.e., the Director General, who is assisted by two SAG level officers, i.e. Deputy Director Generals and two JAG level officers i.e. Directors.

The NICF caters to the training needs of officers in the Department of Telecom as well as Department of Post at varying levels of seniority. The IP&TAFS Probationers are imparted rigorous training for two years in order to equip them with thorough professional knowledge of the workings of the Department. The officers at both middle and senior management level are also given Mid-Career Trainings (MCTs) to acquaint them with latest developments in the Telecom and Postal sector. The officers are trained in the areas of their core competencies such as Licensing and regulatory policy of Telecom Sector including the revenue assessment and revenue collection, Spectrum Management, Management of Universal Service Obligation Fund (USOF) including the BharatNet Scheme of the Government of India, Technology Familiarization including regulatory/ policy/financial impact of the prevalent technology, etc., Foreign Investment Promotion in Telecom Sector and FDI Policy, FEMA guidelines, Telecom Policy and other related regulations, Finance Advise including Accounting, Auditing and Budgeting of the Department of Telecommunications and Department of Posts. They are also imparted training in soft skills such as Stress Management, Communication Skills, Leadership, Team Building, Interpersonal Skills, etc. in order to further enhance their effectiveness and efficiency.

As a training institute, the NICF strives to transcend the limitations of classroom training by organizing various workshops, conferences, symposia etc. to encourage participants to exchange best practices and ideas and learn about new trends in the Telecom and Postal Sector in a congenial

environment. Of late, the NICF has also ventured into the newer areas in the Telecom Sector and a plethora of training activities have been organized ranging from Digital Payments to Digital Financial Services and Digital Inclusion. Moreover, the NICF has also emerged as a key training centre for Telecom Policies, Spectrum Management, Planning & Licensing, USO Regulation, and so on. Furthermore, to provide greater fillip to the goal of human capacity development in the field of Information & Communications Technology (ICT), the NICF regularly undertakes training of trainers, which creates a ripple effect in terms of human capacity building in the field units of the Department of Telecom and Department of Post located across different regions/places of the country.

NICF partners with other National Academies and Centre of excellence including, Reserve Bank of India Staff College, National Academy of Direct Taxes, SVP National Police Academy, National Academy of Audit and Accounts, Postal Staff College, Indian Institute of Public Administration, IIT Bombay etc. alongwith other state organizations including Telecom Regulatory Authority of India, National Security Guard and Air India. NICF also collaborates with International Telecommunication Union (ITU), the UN Specialized Agency for the ICT sector and has recently conducted a capacity building workshop on “Bridging the standardization Gap”.

Overall, the NICF seeks to stay abreast of new trends regarding the role of training institutes in a rapidly evolving and changing ICT environment. As the NICF plays a crucial role in the field of Human Resource Training, Training of Policymakers and Trainers’ Training, it has emerged as a nodal institute that is central to human capacity development in the field of ICT in India. At present NICF is developing a multi-functional campus at Ghitorni which will enable it to emerge as true Centre of excellence. Detail activities are in Chapter-7 under Training.

4.9 DIRECTOR GENERAL TELECOM (DGT)

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 Delhi. The office of Director General Telecom has been identified as an attached office of Department of Telecommunications. Director General Telecom (DGT) is supported by a team consisting of one Senior Deputy Director General and four Deputy Director General at headquarter.

Government has evolved the Director General Telecom structure to ensure the presence of Telegraph Authority in the field at all the Licence Service Areas (LSA) and Large Telecom Districts of the country, 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, the Government created Vigilance & Telecom Monitoring cells (VTM). In Nov-2004, 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, Gujrat, 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 Cells and to distinguish their role vis-a-vis staff-vigilance activities, the name of VTM Cells was 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 under Director General Telecom - An attached office of Department of Telecommunication.

In Feb 2017, a unified structure of Field units including TERM, Security, PG and NT was created in each LSA and headed by Advisor/ Sr.DDG in all the 22 LSA Units spread all over the country. In the present set up of DG (T), there are Sr. DDG and four DDGs at Head Quarter with 22 LSAs. In each LSA, there are five functional verticals namely Service Compliance, Technology, Security, Rural and Administration.

In the year 2019-20 the vertical wise achievements and various functions carried out by these verticals in the License Service Areas (LSAs) are as below:

4.9.1 Service Compliance Vertical

1. **Monitoring of compliance to prescribed norms regarding acquisition of subscribers:** In the year 2007, it was decided to have a continuous monitoring of compliance to prescribed norms regarding acquisition of subscribers for security related concerns. For this, it was decided to verify at least 0.02% of the Customer Acquisition Forms (CAFs) of all the active subscribers on sample basis every month. In the year 2008, the sample size was revised from 0.02% to 0.1% based on the recommendation of National Sample Survey Organization (NSSO). Penalties are also being imposed on Telecom Service Providers (TSPs) for non-compliance to the norms. Apart from above, LSAs are also carrying out following activities and penalties are being imposed for non-compliance:

    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)

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

vi. LSAs have audited approx. 91.11 Lakhs CAFs from 01.04.2019 to 30.11.2019 across all TSPs and on non-compliant CAFs a penalty of approx. Rs. 734.62 crores has been imposed for that period.

2. Monitoring of compliance to Electro Magnetic Field (EMF) radiation norms:

i. 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.

ii. Tarang Sanchar Web Portal, the website is launched with a view to clear the “myths and misconceptions” surrounding mobile tower & rate of emission and to provide a system to users so to check the proper functionality of the tower of a particular zone and whether they are compliant to the norms laid by the Government for EMF.

iii. LSA Field units have conducted around 175 EMF awareness workshops at various places throughout the country to spread awareness among general public on EMF emission and mobile towers.

iv. LSAs have also audited approx. 1.16 lakhs BTSs from 01.04.2019 to 30.11.2019 across all TSPs. Further, for violation of various EMF norms, a penalty of approx. Rs. 28.83 crores have been imposed for period from 01.04.2019 to 30.11.2019.

3. Service Testing for checking Roll-out obligations:

i. As per the license agreement all the Access Service Licensees are required to roll out their services within prescribed time periods. For this, they have to offer their services in the districts selected by them for crosschecking the quality/ coverage and other parameters by DoT which is termed as Service Testing.

ii. 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) against the cases tested by them. Liquidated Damage (LD) Charges is imposed on the TSPs who are not complying to Roll-out obligation conditions.

iii. LSAs have carried out service testing to check Roll-out obligations of approx. 935 towns for period from 01.04.2019 to 30.11.2019 across all TSPs and approx. Rs 7.70 Crore has been collected as service testing fee for that period.

4. **Coordination and Monitoring of TSPs:** LSA field units are regularly carrying out the activity of coordination among various network operators, telecom service providers in the field and also monitoring the commitments made by the TSPs in improving Quality of Services, call drops etc.

5. **Checking of service compliance:** Necessary compliance by the licensees in respect of any directions issued by the licensor in public interest, including imposition of penalty, if any, in accordance with DoT guidelines.

6. **Mobile Number Portability:** Issues related to Mobile Number Portability such as port in, port out, or coordination with MNPOs, complaints of subscribers and their resolutions etc.

7. Electromagnetic compatibility compliance enforcement of Telecom and Railway Operators across the country by RE Unit of Delhi LSA.

4.9.2 Technology Vertical

1. **Inspections of TSPs/ Subscribers:**

   i. 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, Heavy users, ILL/IPLC/ NPLC customers, V-SAT customers.

   ii. During the period 01.04.2019 to 30.11.2019, a total of 1456 inspections of TSPs/OSPs/ IP-1/Bulk Customers/Warehouses/Retailers/Distributors have been carried out by LSAs.

2. **Registration of Other Service Providers (OSPs):**

   i. LSAs have been entrusted to register Other Service Providers in LSAs like BPO, KPO, Network Operation Centre, Vehicle Tracking System, e-Commerce, Tele-medicine, Tele-education etc.

   ii. During the period from 01.04.2019 to 30.11.2019, 2322 number of OSPs have been registered by different LSAs across the country.

3. **Geo-Intelligent Disaster Early Warning and Resource Management Platform using Common Alerting Protocol (CAP):** Pilot testing of Early warning system has been carried out at more than 10 LSAs. Now, all the TSPs have come on board. The project is under submission for obtaining approval and expenditure sanction from MHA through DM cell of DoT & NDMA. Meantime, NDMA has sanctioned Rs 15 Crore to DoT/C-DoT for CAP based Pilot Project Implementation in Tamil Nadu. MoU between NDMA and C-DoT has been signed and DoT will be the facilitator. It is expected that the project shall be launched in next three months.

4. **Online License Management System (OLMS)- Saral Sanchar Portal:** Saral Sanchar portal consists of two modules: UL and OSP module. All the workflows of OSP module phase 1 were developed and shared with the concerned cell of DoT for implementation in Software. After due Validation & Testing, and User acceptance, the web-based Portal (https://saralsanchar.gov.in), for issuing of various types of Licenses and Registration certificates for OSPs has been deployed and launched. All the prospective applicants/stakeholders started using Saral Sanchar portal for new registration as well migration of old OSP applicants. The old OSP portal has been closed.

5. **Implementation of Time Synchronization Pan India Project in Telecom Network:** MOU between CSIR NPL and DOT signed for implementation of Pan India Time Synchronization Project. The case for payment of consultancy charges of INR 4.72 Crore to the CSIR-NPL is under process.

6. **DoT Data Network (DDN)/ renamed as Smart LSA:** A committee was constituted to recommend a solution for digitizing and automate the various processes for DoT field units and DG(T) HQs. Administrative approval of Secretary(T) on the committee recommendation for smart LSA/DDN has been obtained. Smart LSA solution consists of 10 software modules and business requirement documents of all the modules have been framed. Smart LSA project is based on subscription based cloud solution and proposed to be carried out in phase manner. Meantime, it was decided in high level committee of DoT officers, to create a software development unit under DGT for Deployment of various software application for use of DG Telecom.

7. **Other Technology functions:** To monitor inter operator connectivity to ensure optimum Call Completion Ratio (CCR) for inter operator calls. Analysis of call details records/exchange records / subscription/traffic data of various licensees. Matters related to NOC for selling of the global calling cards, international SIMs etc. Verification of VLR data of licensees in the field on need basis.

4.9.3 Security Vertical

1. Lawful Interception and National Security:

(i) Centralized Monitoring System (CMS) has been implemented with the approval of Committee on Security (CCS) with Government funding of Rs. 400 Crores. 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 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.

2. GREY market/Clandestine Operations:

(i) LSAs carry out investigation to curb illegal operations (not permitted under Indian Telegraph Act) 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 recci of suspected premises with the help of local police, before busting the frauds. LSA field units file an FIR against the culprits, pursue the case and issue notices indicating violation of conditions of various Acts.

(ii) LSA field units have unearthed around 890 cases of illegal set ups till Dec,2019.

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

3. **Security Audit of TSPs and ISPs:** LSAs have carried out the Security Audit of TSPs/ISPs for Security compliance of various security norms prescribed in Indian Telegraph Act and License Agreement. LSAs have carried out 39 Security Audits during the period of Apr 2019 to 31.10.2019.

4.9.4 Rural Vertical

1. **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 13 States/UTs, the State RoW Policies have been Notified & are aligned with DoT RoW Rules. Further, in 8 states, alignment of RoW policy is underway.
2. **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 finalisation of the site location under the USOF project.
3. **Direct Beneficiary Transmission Coordination:** Meetings with DBT Mission, Cabinet Secretariat are attended by O/o DGTHQ at New Delhi. 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 services. In this regard, LSAs are attending the SLBC meetings and coordinating with the TSPs for the resolution of the network/connectivity issues in implementation of the DBT mission.

4.9.5 Admin Vertical

1. **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 01.04.2019 to 30.11.2019, approximately **6143** PG cases were received through CPGRAMS including the carry forward cases and approximately 6000 cases were disposed off during this period.
2. **Handling of VIP/PMO references:** Disposal of VIP cases/PMO references pertaining to DGT. More than **60** VIP cases were handled during the period of Apr 2019 up to December, 2019.
3. **Court cases.:** Admin vertical in 22 LSAs handle the various court cases in coordination with Security & East section in O/o DGTHQ. 27 new cases were added to the total list of court cases pan-India making the final count of court cases being defended by DGT unit as 354.

4.10 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 are as follows:

a) Monitoring of the work performed by Pr. CsCA/CsCA offices

b) Internal Audit of all field units of DoT

c) Cadre controlling authority of Group 'C' and Group 'B' Non-Gazetted officials

d) Recruitment of Group C (JA/LDC/MTS/Steno) staff for DoT

Monitoring functions of the CGCA to the DOT field offices includes the following:

a) Compliance of the terms and conditions of the license agreements.

b) Revenue Assessment, Revenue Collection and Maintenance of BGs

c) Pension Authorization, Revision & Disbursement

d) Preparation and Maintenance of proper Accounts

e) Promotion of Digital Payments

f) Monitoring of USOF schemes including the verification and disbursement of subsidy as Designated Monitoring Authority (DMA)

g) Imparting the necessary Training

h) Asset Management under D0T including approval of estimates for repair/renovation/addition/ alteration to existing departmental building, repair and additions to rented buildings for civil and electrical work, monitoring of leased accommodations taken from BSNL, etc.

i) Timely handling of Legal Cases and Updation on LIMBS.

j) Supervision and maintenance of Budget.

k) DDO functions of all the field units of DoT.

l) General Administration and any other functions performed etc.

Presently there are five verticals under the CGCA are as follows:

a) Internal Audit,

b) Revenue,

c) Accounts,

d) Coordination and Administration,

e) Manual & Codification.

These verticals are headed by the SAG level officers designated as Joint CGCA and they report to Additional CGCA an HAG+ level officer.

4.10.1 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

4.10.2 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 & its field units i.e. all Pr. CCA/ CCA offices. Proposal for development of Mobile APP for CGCA website is under consideration.

4.10.3 Implementation of Employee Information System (EIS)

Employee Information System (EIS) has been implemented in CGCA office and all the field units i.e. 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.

4.10.4 Investor Awareness Programmes

Investor Awareness Programmes 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. As of October-2019, 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 conducted in all the CCA offices in upcoming months.

4.10.5 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 as NIL.

4.10.6 Monitoring of VIP reference on Pension Grievances -

During the year 45 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.

4.10.7 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.

4.10.8 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.

4.10.9 Pension Adalats/ National Pension Adalats:

For redressal of grievances of Pensioners, Pension Adalats are being conducted every quarter by all Telecom Circles. For holding of Pension Adalat wide publicity is made for pensioner to participate in the Adalat and register their grievances if any. Monitoring of Progress of this Pension Adalat is done by CGCA office and the cases registered in Adalat have to be settled by Telecom Circles. Apart from Quarterly Pension Adalat, a Nation Wide Pension Adalat was also organized in all Telecom Circles on the direction of Ministry of Personnel, Public Grievances and Pensions. The settlement of Pension cases registered in Nation Wide Pension Adalat is monitored by CGCA.

During Nation Wide Pension Adalat held on 23.08.2019, 643 cases/ grievances were received out of which 567 cases have been resolved and only 76 cases are pending in 8 Telecom Circles. Monitoring of these cases is being made by CGCA Office.

4.10.10 Online Training on SAMPANN & user manual:

SAMPANN has been implemented as a Single Window System for complete pension process and direct disbursement of pension on timely basis without any intermediate authority or institution to the pensioners. Pension cases are now being processed through SAMPANN. Online training cum sessions are being held for various Telecom Circle/ field offices in a phased manner to give necessary inputs on working and resolving various issues faced during working on SAMPANN software.

4.10.11 Monitoring & Review of CCA offices:

Conducting Regional Review Meeting of CCA offices frequently to monitor and review the work done in CCA offices. It carries out the review of the heads of Pr. CCA/CCA/Jt.CCA offices through periodical reports and meetings. The Regional Review Meeting of Western Region, Central Region,

Southern Region & Northern Region has been conducted. The review meeting of Eastern Zone has been scheduled to be done in coming month. The CGCA is also the Cadre controlling authority of Group "C' and Group "B" Non-Gazetted officials working in these offices.

4.10.12 Annual Internal Audit plan for the year 2019-2020:

o Annual Internal Audit plan for the year 2019-2020 has been prepared in advance and circulated vide 1-2/2018-19/IA dtd.18.02.2019.

S. No	Name of Unit	Period of Inspection	Months
1	CDOT Bengaluru	08.04.19 to12.04.19	April 2019
2	CDOT Delhi	22.04.19 to 26.04.19	
3	TERM Mumbai	06.05.19 to 10.05.19	May 2019
4	NTIPRIT	10.06.19 to 14.06.19	June 2019
5	RTEC Bengaluru	17.06.19 to 21.06.19	
6	TERM Delhi	23.09.19 to 27.09.19	September 2019
7	Pr.CCA Delhi	14.10.19 to 18.10.19	October 2019
8	RTEC Kolkata	18.11.19 to 20.11.19	November 2019
9	Pr.CCA Hyderabad	25.11.19 to 29.11.19	
10	TERM Hyderabad	02.12.19 to 06.12.19	December 2019
11	TERM Kolkata	09.12.19 to 13.12.19	
12	Pr.CCA Kolkata	16.12.19 to 20.12.19	
13	TEC Delhi	06.01.20 to 10.01.20	January 2020
14	RTEC Mumbai	20.01.20 to 24.01.20	
15	NICF	03.02.20 to 07.02.20	February 2020
16	Pr.CCA Chennai	10.02.20 to 14.02.20	

o All inspections of DOT field units are to be carried out on behalf of CGCA. The IA report of RTEC, Bengaluru is yet to be received at this end.

- **Admittance of Outstanding Paras**

Sl No	Name of the unit	Outstanding paras as on 11.11.2019					
		Year-wise break up	OB		No. of paras raised	No. of paras settled	CB
			OB	Tfd from DOT HQs			
1	RLO,NE, Guwahati	2018-19	-	-	8	-	8
2	RLO, Kolkata	2018-19	-	-	7	-	7

3	Pr.CCA, Delhi	2014-15	-	5	-	-	5
		2015-16	-	6	-	1	5
		2016-17	-	5	-	-	5
		2017-18	-	6	-	1	5
		2018-19	-	-	12	5	7
4	RLO, Delhi	2018-19	-	-	20	5	15
5	Pr.CCA, A.P., Hyderabad	2006-07	-	3	-	1	2
		2012-13	-	9	-	4	5
		2015-16	-	24	-	18	6
		2016-17	-	23	-	14	9
		2017-18	-	12	-	2	10
		2018-19	-	-	23	-	23
6	RLO, Chennai	2018-19	-	-	5	3	2
7	RLO, Mumbai	2018-19	-	-	19	10	9
8	Pr.CCA, Kolkatta	2008-09	-	13	-	11	2
		2014-15	-	3	-	3	0
		2016-17	-	22	-	10	12
		2017-18	-	18	-	9	9
		2018-19	-	-	26	7	19
9	TEC HQ, New Delhi	2018-19	-	-	34	4	30
10	CCA, Gujarat	2018-19	-	-	26	13	13
11	Pr.CCA, Chennai	2010-11	-	1	-	1	0
		2013-14	-	15	-	13	2
		2015-16	-	30	-	24	6
		2016-17	-	4	-	-	4
		2017-18	-	21	-	15	6
		2018-19	-	-	43	18	25
12	NICF, Ghitorni	2013-14	-	9	-	5	4
		2017-18	-	19	-	-	19
		2018-19	-	-	28	-	28
13	CCA, Rajasthan	2018-19	-	-	29	9	20
14	CCA, Mumbai	2014-15	-	23	-	-	23
		2015-16	-	26	-	-	26
		2016-17	-	30	-	3	27
		2017-18	-	29	-	-	29
		2018-19	-	-	12	-	12
15	CCA, Maharashtra/Goa	2018-19	-	-	39	-	39
16	C-DOT, Bengaluru	2019-20	-	-	23	-	23

17	C-DOT, Delhi	2019-20	-	-	44	-	44
18	TERM, Mumbai	2019-20	-	-	21	-	21
19	NTIPRIT, Delhi	2019-20	-	-	45	-	45
20	RTEC, Bengaluru	2019-20	-	-	8	-	8
	Total		-	356	472	209	619

4.10.13 Asset management:

The CGCA has been entrusted with the job of asset management of field units of DoT, which includes monitoring and execution of recently signed MOU with BSNL regarding leasing of BSNL staff quarters for the officials of DoT field units i.e. CCAs, LSAs and WMOs. This office also addresses the issues related to office space and other requirements of CCA offices and sanctions estimates for repair/renovation/addition/alteration to existing departmental building and process cases for hiring office spaces.

4.10.14 INTERNAL AUDIT

The Internal Audit section of CGCA carries out the internal audit of the offices of the Pr.CCA/CCA/Jt. CCAs/DG(NICF), NTIPRIT, C-DoT, TEC, RLO, WMO, TERM Cell, LSA and also carries out the special Audit of BSNL, LWE project Bharatnet project Phase I & II. The O/o CGCA is involved in preparation of questionnaires, framing the Internal Audit policy and Internal Audit methodology within its ambit. It arrives out Performance & Outcome audit of the Pr.CCA/CCA/Jt. CCAs/DG(NICF), NTIPRIT, C-DoT, TEC, RLO, WMO, TERM Cell, LSA. It coordinates a training plan with the training centers of IAS, ICAI, Institute of internal auditors etc. Periodical review of inspection report of all Pr.CCA/CCA is also conducted by this section. It sends quarterly reports to DoT hqrs whereas half-yearly report received from Pr.CCA/CCAs are reviewed and monitors the USOF project and PG cases.

4.10.15 BUDGET ACCOUNTS &IT

Budget Accounts & IT section of O/o the CGCA reviews the budget allocation, expenditure done, monthly state of work report, Pension case on CPGRAM of all Pr.CCA/CCA/Jt. CCAs/DG(NICF) and the implementation and monitoring of SAMPAN. The section also coordinates and conducts investor education, protection fund programme by conducting seminars/workshops in the Pr.CCA/CCA/Jt.CCAs/DG(NICF).Besides the development & updation of website for www.cgca.gov.in, the security audit of all Pr.CCA/CCA/Jt.CCAs/DG(NICF) websites is monitored by this section.

4.10.16 REVENUE

The Revenue section monitors the financial bank guarantee and performance bank guarantee of all Licenses i.e. access service, ISP, TSP, NLD, ILD and other licensees and updation of basic

data of all licenses in the LF software. It also coordinates with the Pr.CCA/CCA/TERM Cell/WPC/ WPF Wing/AS/CS and DS wing of DoT HQ. for issues relating to bank guarantees and monitors assessment of LF in respect of decentralized License and issues clarification to field units for the same. The Revenue section also acts as an appellate authority for assessment of decentralized licensees.

4.11 CONTROLLER OF COMMUNICATION ACCOUNTS (CCA) OFFICE

There are 32 Accounting units (3 Pr.CCA, 25 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, 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.

4.11.1. IMPORTANT INITIATIVES TAKEN

SAMPANN (System for Accounting and Management of Pension): SAMPANN the brand name of the CPMS (Comprehensive Pension Management System) was inaugurated by Hon'ble Prime Minister on 29th December 2018 at Varanasi and is rolled out across 28 Pr. CCAs/CCAs.

- SAMPANN integrates the processing, sanctioning, authorization and payment processes under a common platform, facilitates direct credit of pension to the accounts of pensioners and monitoring of pension and pension grievances and provides the following benefits to the pensioners:
- A single window system for complete pension process, avoiding the complexities.
- Pensioners provided with a login, for tracking the pension status and ongoing related processes.
- Ensures direct disbursement of pension on timely basis without the intervention of 3rd party.
- Introduction of Online Grievance Management ensures transparency.
- Effective & Quick process of pension arrears & pension revision cases.
- Online submission of Income Tax saving declaration and calculation of Income tax.

A toll-free helpline facility for the pensioner is also being established at DoT(HQ) along with a centralized 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.

As Government has provided Voluntary Retirement Scheme for BSNL employees and nearly 90,000 employees are opting for the scheme. A new sub-module is being developed to handle the cases of BSNL Voluntary Retirement Scheme 2019 in SAMPANN.

Currently, over 11,000 Pensioners and Rs.1900 Crores of pension and pensionary benefits has been disbursed through SAMPANN as on 3.12.2019.

(i) PFMS (Public Financial Management System): Department of Telecom 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.

(ii) NTRP (Non-Tax Receipt Portal): 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.

(iii) E-Payments: 99.53% Electronic Payment (e-payment) has been implemented as per the instructions of Ministry of Finance in Pr. CCA/CCA offices.

(iv) SWR (State of Work Report): Web based platform has been developed to ensure accuracy, transparency, accountability and prompt reporting by CCA offices to DoT HQ/CGCA.

(v) Direct payment of GPF: This has been implemented for BSNL (PSU) employees across all the CCAs who are maintaining the GPF accounts for the PSU.

(vi) Employee Information System (EIS): An integrated mechanism was envisaged by the Department of Telecommunications in the form of EIS to develop a single platform for its employee to maximize the employee satisfaction and for processing the salary in a digitized way. All Pr. CCAs/CCAs offices are on-boarded on EIS portal for drawal of salary w.e.f July,2019.

4.11.2 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 (Rs. In crore)
2017-18 (as on March 31st, 2018)	3.24	10804.89
2018-2019 (as on March 31st, 2019)	3.58	11820.71
2019-2020 (as on November 30th ,2019)	3.69	6869

- **Pension Adalat:** A day was earmarked for holding the National level Pension Adalat and 1st All India Telecom Pensioners Awareness-cum-Counselling Session across all CsCA offices on the 23rdof September 2019. Over and above this, Pension Adalats are being organized regularly every quarter by the CsCA offices as well as DoT HQ. The updated figures are as under–

Statement of Pension Adalat

Total Cases taken up during Pension Adalat	No of cases Settled during Adalat	No of cases unresolved/ Pending
643	579	64 (of latest cases)

- Regular monitoring and clearance of Pension Grievances under CPENGRAMS.
- **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.
- **Pension Voucher Audit Functions:** CsCA offices carry out post audit of pension and pensionary benefits disbursed by the designated banks (CPPCS) and post offices.
- **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.

4.11.3 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.

4.11.4 Bharat Kosh

The Non-Tax Receipt Portal (NTRP) is 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 Telecom has also integrated its receipts through Bharat kosh portal for LF and is being used as Payment portal for other receipts to achieve the mandate of Government for 100% Digital receipts.

4.11.5 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 Sale 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).

Licence Fee is payable in four quarterly instalments during each financial year. Quarterly instalment 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 Licence Fee paid shall not fall short of Licence 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 capital cost.

TREND OF LICENCE FEE COLLECTION

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

Year wise Licence Fee Collections**					
F.Y	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Amount	12358	15771	15615	13262	11134

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

Spectrum Usage Charges(SUC) & other receipts

Nature of Receipts	April 19 to Nov. 19 (Actual revenue for 8 months)	Anticipated receipts Dec. 19 to March 20 (expected revenue for 4months) (FY 2019-20)	Total Anticipated receipts in the Financial year 2019-20
SUC:- CDMA	0.78	0.39	1.17
SUC:- GSM+BWA +VSAT	2082.40	1850.43	3932.83
Total – SUC	**2083.18**	**1850.82**	**3934.00**
Spectrum liberalization receipts	28.40	25.64	54.04
Deferred (Spectrum auction instalments) payment receipts	18119.01	6179.29	24298.30
WPC receipt (DDs/e-receipts through NEFT, RTGS/Bharatkosh)	341.69	170.85	512.54
Grant Total	**20572.28**	**8226.60**	**28798.88**

4.11.6 REVENUE MANAGEMENT SYSTEM (SARAS):

(a) 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.

(b) A Revenue Management Software (RMS)-SARAS (System for Assessment of LF Revenue and SUC) is accordingly being implemented, which would digitize 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.

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

4.12 FOREIGN INVESTMENT POLICY & PROMOTION (FIPP) FIPP:

(i) Foreign Direct Investment (FDI) in the Telecom sector was permitted beginning with the Telecom manufacturing segment in 1991 – when India adopted economic liberalization. Later, the private sector was permitted to enter the field of Telecom service provisioning and FDI

norms were progressively relaxed. Until 2005, foreign investors were allowed to hold only up to 49% of the equity of a Telecom licensee. In 2005, the Government of India increased the FDI cap to 74%. This limit has been further increased to 100% in 2013. The motivation behind enhancement of FDI cap was to encourage capital inflows along with availability of lower cost capital to existing service providers.

(ii) The current FDI policy 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, August 2017

iii. 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.

iv. Further, the FIPP wing also undertakes activities to promise the Telecommunication services sector for attracting FDI in the sector. In this context, one-day seminar 'Invest DigiCom 2019' was organized by National Institute of Communication Finance (NICF), FIPP wing in collaboration with NIPFP on 24th September 2019. The seminar was inaugurated by Shri. Ravi Shankar Prasad, Hon'ble Minister for Communication, IT and Law and Justice and he also released a publication titled – "Propelling Digital Communications in India: The Role of Foreign Direct Investment". The stakeholders from Government, Regulatory Authorities, Public, Private, Industry Associations etc. attended the seminar.

v. Total FDI inflow into Telecommunications sector during April 2000 to June 2019 was Rs. 217,601 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:

Rank	Sector	2016-17	2017-18	2018-19	2019-2020 (April – June)	Cumulative inflows (April 2000 to June 2018)	%age to Total inflows
1	Services Sector*	58,214	43,249	63,909	19,462	375937	18
2	Computer hardware and software	24,605	39,670	45,297	15,585	185813	9
3	Telecommunications	37,435	39,748	18,337	29,352	180593	8

Source: DPIIT

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

vi. 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.

FINANCE COMPENDIUM:

Integrated Finance Division of Department of Telecommunication issued its third edition of compendium of instructions/orders comprising of all recent instructions /orders up to June 2019. Most of the relevant orders/instructions issued from time to time by the various Ministries / Departments of the Central Government have been compiled in the compendium, as a guidance note for all the Offices/ Divisions of field units and attached office of the Ministry. It is helpful to

all concerned while taking decisions having financial implications as it contains relevant orders relating to Financial delegation too. The Checklist in the compendium has been customized to suit the requirements of the Department and facilitate various Divisions in processing of cases.

i. 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.

ii. IFD is the nodal wing for OCMS portal.

This is regarding uploading/updating of details of Infrastructure and Project (more than Rs.150 crores.) 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.

4.13 BUILDING WORKS DIVISION

P&T Building Works (P&T BWS), Group 'A' Service is an organized Group 'A' service of Department of Telecommunications (DoT) under Ministry of Communications was constituted in 1990. 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.

2. The officers are recruited to this service through Engineering Services Examination conducted by the Union Public Service Commission. The officers recruited to this service are deployed in DoT and DoP under the Ministry of Communications. After a gap of 29 years, cadre Review of the Service has been got completed with the approval of Union Cabinet on 6th November, 2019.

4.14 DoT FIELD OFFICES IN 22 LICENSED SERVICE AREAS (LSA)

All the LSAs are headed by HAG/HAG+ level officer, with following five functional verticals each headed by SAG (DDG) level officers:

a. Service Compliance

b. Security

c. Technology

d. Rural Infrastructure

e. Administration

Broad functions of field units include: Duties and responsibilities of various functional verticals are as given under:

(a) Service Compliance:

- Checking of the service compliance by the licensee in respect of the license conditions and any directions issued by the licensor in public interest.
- Matters related to Electro Magnetic Radiation (EMR) emission from Telecom installations & Tarang Sanchar Portal
- Monitoring of compliance to prescribed norms regarding acquisition of subscribers with the objective to ascertain that the mobile service operators are following the DoT guidelines for Subscriber verification before providing connections
- Service Testing of various Licensed Service Providers for checking roll-out obligation as per license condition.

(b) Security:

- Matters related to Security and Lawful Interception: Act as technical interface between Security Agencies and Telecom Service Providers
- Operation and Maintenance of CMS/ IMS
- Curbing illegal activities/ Control over clandestine / illegal operation of telecom networks
- To file FIR against culprits, pursue the cases and issue notices indicating violation of conditions of various Acts and statute in force
- Analysis of call/subscription/traffic data of various licensees
- Security related Inspection of Internet Lease Line, International/ National Private Leased Circuit
- Detection and Analysis of Non-genuine IMEI cases

- Security Audit of Telecom Network of Service Provider
- Coordination with LEA in various projects like Crime and Criminal Tracking Network & systems (CCTNS), Anchoring of CERTs of state Government etc.
- Implementation of IMEI Registry Project and its maintenance

(c) Technology:

- Inspections of Telecom Service Providers (Access Service, NLD, ILD, ISP, OSP, IP, VSAT, etc.)
- Registration of Other Service Providers (OSPs)
- Telecommunication services in response to Disaster (Disaster Management)
- Matters related to NOC for selling of the global calling cards, international SIMs etc.
- Ensuring Time synchronization of Telecom Networks including the O&M of related equipment if required.
- Secured Dedicated Communication Network, Effective implementation of IPv6

(d) Rural:

- Right of Way (RoW) related issues and coordination with concerned Central and State Government's department and institutions, local bodies.
- Network coverage/connectivity of villages for Direct Benefit Transfer (DBT) mission and of Banks in rural areas under Financial Inclusion Planning (FIP)
- Design, Planning, Implementation of projects funded by DoT & USOF.
- Duties and responsibilities assigned by DoT & USOF generally/specifically
- Implementation of Environmental sustainable Technologies in rural areas

(e) Administration:

- Staff, Establishment and general administration matters
- Disposal of Public Grievances
- Responding RTI queries.
- Training& Skill Development
- Holding of workshops, conferences and presentations

- Building works
- Responding to Parliamentary matters
- Handling Court cases including engagement of legal counsel, Vigilance Cases, Pension etc.
- Other regular administrative works

4.15 RAILWAY ELECTRIFICATIONS PROJECT CIRCLE (REPC) – UNDER ADMINISTRATIVE CONTROL OF LSA -DELHI

Prior to the formation of Railway Electrification Project Circle in DoT in 1984, the job of protection work/shifting of alignments was carried out by the four Zonal Telecom Project Circles, as the work of electrification by the Railways was considerably very less. When Railways took up the work of Electrification as a matter of policy, an organisation RAILWAY ELECTRIFICATION PROJECT CIRCLE, was created in DoT for protection/shifting of Telecom Trunk alignments along the Railway Tracks, and issue the 25 KV/AC "DYNAMIC CLEARANCE CERTIFICATE" to Railways. At present this organization is headed by DDG (RE) an officer of SAG level under administrative control of LSA Head, Delhi.

REPC conducts co-ordination meetings with Railways to fix realistic targets, joint inspections and also sort out problems with local Telecom authorities and Railways.

Co-ordination in general is required with the following:

i. BSNL/ New Delhi

ii. Railway Ministry

iii. All CSTEs and CPMs all over India

iv. General Manager Railway/ CORE/ Allahabad

v. All CGMs/ BSNL and GMs/ BSNL of Territorial circles

CHAPTER 5

PUBLIC SECTOR UNDERTAKINGS AND AUTONOMOUS BODIES

5.1 BHARAT SANCHAR NIGAM LIMITED

5.1.1 Role and Functions: Bharat Sanchar Nigam Limited (BSNL) was formed on 1st October 2000 by Corporatisation of the erstwhile Department of Telecom Operations & Department Telecom Services. The company has taken over the erstwhile functions of the Department of Telecom in respect of provision of telecom services across the length and breadth of the country excluding Delhi and Mumbai. BSNL has large work force of around 1.53 lakh as on 04.12.2019. BSNL is a 100% Govt. of India owned Public Sector Undertaking.

BSNL provides all types of telecom services namely wireline, Mobile, Broadband, Internet, leased circuits and long distance telecom Service. The company has also been in the forefront of technology with 100% digital technology switching network. BSNL 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 targets & achievements for the year 2018-19 & 2019-20, financial performance, Training etc. of BSNL are given as under:

Table 5.1 Achievement during financial year 2018-19

S. No.	Item	Unit	Year 2018-19	
			Target	Achievement
1	Total Telephone Connection	Lakh	-	**26.99**
1 (a)	Wire-line	Lakh	-	**(-) 10.88**
1 (b)	WLL	Lakh	-	**(-) 7.45**
1 (c)	Mobile	Lakh	-	**45.33**
2	Broadband (Wireline + Wireless)	Lakh	-	**(-) 1.65**
3	Total Switching Capacity Mobile	Lakh Lines	-	**85.03**
4	**Rural Telephone**	**Lakh**	**-**	**5.01**

5.2 Achievement during Financial Year 2019-20 (up to 31.10.2019)						
S.No	**Item**	**Unit**	**Year 2019 - 20**			
			Target (2019-20)	**Status as on 01.04.2019**	**Status as on 31.10.2019**	**Achievement up to 31.10.2019**
1	Total Telephone Connection	Lakh	-	1268.1	1272.03	**3.93**
1 (a)	Wire-line	Lakh	-	111.68	100.02	**(-) 11.66**
1 (b)	WLL	Lakh	-	1156.43	1172.01	**15.58**
2	Total Switching Capacity Mobile	Lakh Lines	-	1115.86	1152.87	**37.01**
3	Broadband Connection (Wireline +Wireless)	Lakh	-	215.76	217.44	**1.68**
4	**Rural Telephone Connection**	**Lakh**	**-**	**394.81**	**397.57**	**2.76**

5.1.3 Financial Performance:

The details of profit / loss figure for the year, 2016-17, 2017-18, 2018-19 & 2019-20 (up to 30.09.2019) are given as under:

(Figures in Rs. crore)

Table 5.3				
Financial Year	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Total income	31,534	25,071	1,93,21	**90,34**
Total expenditure	36,327	33,809	34,225	**16,540**
Net profit	**(-) 4,793**	**(-) 7,993**	**(-) 14,904**	**(-) 7,506**

Note: - * Financial figures are Provisional & Un-audited as on 30.09.2019.

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. Among these Telecom Factories, Mumbai is 18001:2007 OHSAS certified. Presently, these factories are engaged in production of SIM Card, PLB HDPE Telecom Duct, OFC Accessories, and SS Drop wire, Jointing Kits, LJU cum Splitter, Towers & other conventional items.

During the year 2019-20 (April 2019– Dec. 2019), all the Telecom Factories together have supplied around 1,603 Kms. of PLB HDPE Ducts and a major portion of this supply has been supplied for Bharat Net Project of Govt. of India.

The Telecom Factories have achieved a turnover of Rs. 25.81 cr during the financial year 2019-20 (April 2019- Dec. 2019). Details are as under: -

(Figures in Rs. crore)

Table 5.4

Factory Name	Target for 2019- 2020	Turnover during April 2019 to Dec. 2019
Kolkata	Not fixed	4.50
Jabalpur		4.39
Mumbai		16.92
Total		25.81

Amidst all constraints posed by non-availability of fund, decreasing work force and inter – operator competitive environment, factories have tried their best to meet the requirement of various Telecom goods in the BSNL field units during the year 2019-20 (April 2019 to Dec. 2019).

5.1.5 Training

BSNL has 29 Telecom Training Centers countrywide comprising of three APEX level Training Centre's namely:

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

Training is ancillary system to support various business units of BSNL and to improve competency/ expertise of executives/non executives in telecom field for sustaining in competitive market.

Following are the important activities in training in BSNL:

A. In service training:

A total of 10,503 staff was trained (6,728 executives and 3,775 non-executives) during April 2019 to November 2019 through various training centres for total of 1,36,348 man-days (1,10,897 man-days for executives and 25451 man-days for non-executives).

B. Induction Training:

BSNL conducted induction training for 243 directly recruited / promoted Junior Telecom Officers during April 2019 to Nov 2019 in various phase at different centres.

C. Training Revenue:

BSNL training centers provides 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.

During the period from April 2019 to Nov. 2019, revenue of Rs. 19.69 Cr was generated by imparting training to non BSNL trainees and by sharing of training infrastructure.

D. Skill Development:

1. **Pilot Scheme of DoT (PDDUSKVP):** BSNL received work order from DoT to conduct skill development training under PDDUSKVP scheme for 10,000 candidates on nomination basis. Status as below:

Target Candidates	Period	No. of candidates passed (30th Sep 2019)	Amount Received from DoT	Total Work order amountz
10,000	July'18 to Oct '19	10,055	2.84 Cr	11.386 Cr

2. Skill Development Scheme of State Governments:

- Telecom Training Centre Chennai & Tamil Nadu Circle are conducting Skill Development training with Tamil Nadu Skill Development Corporation. 2855 candidates have been trained under this scheme.
- Regional Telecom Training Centre Trivandrum & Kerala Circle have bagged the contract from Kerala Academy for Skills Excellence for skilling 990 candidates under CSSM scheme of PMKVY 2.0 Program. 330 out of 990 have been trained as on date.

5.1.6 Development of Telecommunication Facilities in Selected Areas

Network Status of NE Region States: - The status of telecom facilities in each of the state of North East Region is as below:

Network Status of NE Region States as on 31.10.2019						
S. No.	**Name of State**	**Telephone Exchange (Wire-line) In Nos.**	**Total Capacity (Wire-line + Wireless) in Lakh Lines**	**Total DELs (Wire-line+ Wireless) In Lakh.**	**Broadband Connection (Wire-line) In Nos.**	**VPTs In Nos.**
1	Assam	**544**	**25.110**	**28.065**	**70,894**	**105**
2	**NE-1**	**186**	**18.571**	**9.769**	**36,317**	**575**
2 (a)	Meghalaya	49	6.465	3.226	36,317	270
2 (b)	Mizoram	55	3.410	2.273		83
2 (c)	Tripura	82	8.697	4.269		222
3	**NE-II**	**196**	**13.162**	**5.774**	**21,443**	**1,539**
3 (a)	Arunachal Pradesh	92	5.778	2.926	21,443	1,054
3 (b)	Manipur	43	3.942	1.583		418
3 (c)	Nagaland	61	3.443	1.265		67
4	Sikkim	**32**	**1.561**	**0.506**	**2,363**	**376**
	NE Region	**958**	**58.405**	**44.114**	**1,31,017**	**2,595**

Special Component Plans: Annual Plan of BSNL pays special emphasis on accelerated growth of telecommunication facilities under Special Component Plans in (1) North Eastern Region and (2) Tribal Sub-plan in Tribal Areas.

Development Status: - Target and achievement during the year 2019-20 for the North East Region is as below:

Table 5.6 Target and achievement during the year 2018-19 for the North East Region					
S.No	**Items**	**Target**	**Status as on 01.04.2019**	**Status as on 31.10.2019**	**Achievement up to 31.10.2019**
1	Total Switching Capacity (Lakh Line)	-	57.97	58.41	0.44
1 (a)	Wire-line	-	8.99	9.47	0.48
1 (b)	GSM	-	48.98	48.94	(-) 0.04
2	Total Telephone Connection(Lakh)	-	44.47	44.11	(-) 0.36
2 (a)	Wire-line	-	2.22	2.02	(-) 0.20
2 (b)	Mobile	-	42.25	42.09	(-) 0.16
3	Broadband (Wireline Connection) in Lakh.	-	1.42	1.31	(-) 0.11
4	**VPT (Nos.)**	**-**	**2,614**	**2,595**	**(-) 19**

Tele-density: Status of telephone connections in N.E Region and the tele-density State/Circle-wise as on 30.09.2019 is as below

Name of State	Projected Population as on 30.09.2019 (in thousand)	Telephone connection of BSNL	Teledensity due to BSNL's phones	Teledensity by All Operators	% Market share of BSNL
Assam	35,059	27,84,838	7.94	68.89	11.53
NE-1	8,242	9,68,921	11.76	82.66	12.64
NE-II	6,755	5,98,251	8.86		
Sikkim	608	50,616	8.33	*	--
Total NE Region	**50,664**	**44,02,626**	**8.69**	**73.02**	**--**

* 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.

Tribal Sub Plan: The Tribal Sub Plan (TSP) is a part of the Annual Plan for providing telecom facilities in the tribal areas. For a balance and faster development of telecom facilities in tribal areas, these areas are treated as special focus areas. The main objectives of the Tribal Sub Plan areas are (i) to provide the telephone facility on demand in tribal areas (ii) to provide NSD facility to all exchanges in tribal areas and (iii) to provide public telephone in all tribal villages.

Tribal areas fall in the States of Andaman & Nicobar, Andhra Pradesh, Assam, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Maharashtra, Madhya Pradesh, NE-I, NE-II, Orissa, Rajasthan, Tamil Nadu, Uttaranchal, U.P (East) & West Bengal.

Targets and achievements for the year 2019-20 (up to 30.09.2019) under Tribal-sub-plan (TSP) are as follows: -

Table 5.7

Sl. No.	Items	2019-20	
		Target	Achievement (up to 30.09.2019)
1.	Wireline Telephone exchanges	-	(-) 123
2.	Switching Capacity (Wireline + Wireless)	-	3,59,734
3.	DELs (Wireline + Wireless)	-	84,762
4.	OFC (Kms)	-	490
5.	Broad band (Wireline+Wireless) Connection (in nos.)	-	(-) 14,364
6.	Net addition Wi-Fi Hot Spot	-	667
7.	Net addition Leased Circuit	-	1,215

5.1.7 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 for the year 2019-20. Rs. 3 Crores has been allocated for various welfare programmes for the year 2019-20. Some of the salient welfare schemes are as under: -

(i) Grants of Scholarship / Book Awards to the wards of BSNL Employees.

(ii) Farewell function is organised for employees retiring on superannuation /VRS.

(iii) Financial assistance to the tune of Rs. 25,000/- in case of serious illness or major surgical treatments.

(iv) Immediate financial assistance of Rs. 20,000/- to the family of the BSNL employees who die in harness irrespective of basic pay.

(v) Financial assistance to the tune of Rs. 5,000/- per employee who are the victims of Natural Calamities / Communal riots / terrorist attacks etc.

(vi) Organizing of Cultural Functions, Drawing Competitions and Slogan Writing competitions.

(vii) Transport subsidy to the tune of 75 % for organising the excursion trip.

(viii) Grant in Aid to Recreation Clubs in each Circle /SSA.

(ix) Grant in Aid to Resident Welfare Association (RWA)

(x) Grant in Aid to Telecom Women Central Organisation / Telecom Women Welfare Organisation (TWCO /TWWO): The main role/objective of this organization is promotion of welfare of the families of the employees and its main activities are:

a) Setting up of Crèches for the child care in P&T residential colony and in offices.

b) TWCO/TWWOs have been allowed usage of computer facilities of Telecom Training Centre for imparting training to the children and spouses of BSNL employees.

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 the case of girl students 15 % relaxation is being given for grant of Book awards.

Bharat Sanchar Seva Padaks: 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 Centres / SSA respectively.

Sports: BSNL is encouraging its employees to participate in various sports activities by annually organizing 15 Games and one Cultural competition.

- BSNL Sports Board is affiliated with 10 Sports Federation of India.
- Organizational support given to player to participate in International, National, PSU and other national level events.
- Sanchar Krida Award /Cash Awards are given to sportsmen who excel at National and International level events.

5.1.8 Staff Strength

Total number of working employees as on 04.12.2019 is 1,52,803. Number of Disabled employees as on 04.12.2019 is 970.

Table 5.8

Group	Number of employees	Employees-Scheduled		OBC	Ex-Servicemen	Women Employees
		Scheduled Caste	Scheduled Tribe			
Executive	44,880	8,022	2,706	8,880	199	7,603
Non-Executive	1,07,923	20,214	5,767	10,891	104	17,269
Total	**1,52,803**	**28,236**	**8,473**	**19,771**	**303**	**24,872**

5.1.9 Schemes for the benefit of Women and persons with Disabilities

- 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 @ Rs. 1,000/- per month per child maximum for two children till the child attains two years.
- 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 Rs. 1,000/-.
- As far as possible, subject to administrative constraints, persons with disabilities are posted near their native places within the region.

- Grant of Child Adoption leaves of 180 days to female BSNL employees and extension of the facility of Paternity leave to adoptive fathers.

5.2 MAHANAGAR TELEPHONE NIGAM LIMITED(MTNL)

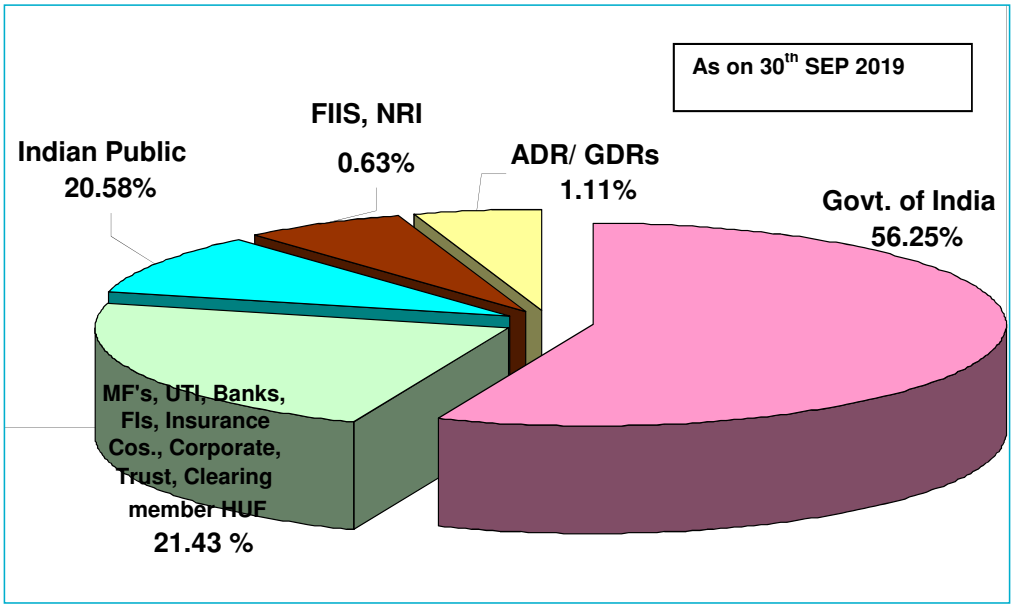
Mahanagar Telephone Nigam Limited (MTNL) was incorporated on Feb.28, 1986 under the Companies Act as a wholly owned Govt. Company and on April, 01 1986, assumed responsibility for the control, management, operation of the telecommunications services in the two Metropolitan Cities of Delhi and Mumbai. 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 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)
- 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.

The authorized capital of the Company is Rs 10,000 crores. The paid up share capital is Rs. 630 crores divided into Rs. 63 crores share of Rs. 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 Shareholding Pattern



(A) Physical Performance

During the year 2019-20 (upto Oct 19), there is total gross addition of 64,352 connections (including Fixed line, GSM, Broadband & FTTH). During this period as sufficient spare capacity was available for all type of services & owing to severe financial constraints of the company, no addition in the Networks installed Capacity was made.

5.2.2. Achievements:

Details of achievements of MTNL Delhi & Mumbai during 2019-20 (upto Oct 19) are as follows:

Table 5.9

S.No.	Items	Achievements 2019-20 (upto Oct'19)	
		Delhi	Mumbai
A	DELs (includes Landline, GSM & Broadband) Gross	15,499	39,193
B	FTTH (Gross)	6831	2829
C	Optical fibre Cable(in Route Kms)	66.834	170.732
D	Optical fibre Cable(in Fibre Kms)	2848.674	4082.386

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 very high tele-density of around 225% in Delhi and 137% in Mumbai. However, to overcome these limitations MTNL has

modernized its network by incorporating state of art technologies and adopting customer friendly approach. Status as on 30th Oct. 2019 of total Network Capacity & subscriber base in respect of Fixed line, Mobile & Broad band services are summarized below-

(Figures in Numbers)

Table 5.10			
S.No.	**Services**	**Network Capacity**	**Subscriber base**
1.	Fixed Line	50,02,897	31,67,728
2.	Mobile	56,00,000	33,86,809
3.	Broadband	16,34,644	8,23,542
4.	FTTH	2,368 (in no. of ports)*	30,822

*each port can provide 32 No. of connections

5.2.3 Financial Performance

The Financial performance of MTNL is detailed below:

(Figures in Rs. crore)

Table 5.11 Financial performance of MTNL				
Items	**2016-17**	**2017-18**	**2018-19**	**2019-20(upto Sept'19)**
Income from Services	2869.68	2371.91	1987.80	781.67
Other Income	682.78	744.51	618.91	350.41
Total Income	3552.46	3116.42	2606.71	1132.08
Expenditure	6497.92	6089.87	5996.91	3134.92
PBT	-2945.46	-2973.45	-3390.20	-2002.84
Net profit	**-2970.57**	**-2970.65**	**-3397.59**	**-2002.84**

Despite stiff competition, from other operators, MTNL has achieved a financial turnover of Rs. 1132.08 crores during the year 2019-20 (upto sept'19). During the said period MTNL posted a loss of Rs (2002.84) crore as the major portion of working expenses goes toward staff cost.

5.2.4 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:

Upgradation of Mobile Network in Delhi to provide high speed data

To meet the ever increasing demands of high speed data to its customers, MTNL is giving major thrust on the expansion of capacity as well as quality of its 3G Networks. MTNL's HSDPA 3G network supporting Download speed of 3.6 Mbps & Upload speed of 384 Kbps has been upgraded to support HSPA+ capabilities with corresponding speeds of 21.1 Mbps & 5.76 Mbps. The data handling capacity of the core network has been upgraded from existing capacity of 400 Mbps to 10 Gbps.

Expansion and upgradation of 3G Network in Delhi:

a. The 3G network in Delhi has been expanded to improve network coverage by adding 1080 nos. of new sites. In addition, 720 Node-Bs of existing 3G-network have also been upgraded to HSPA+ capabilities

b. The existing Microwave Network for backhaul has been upgraded from 16 Mbps to Hybrid Microwave of 400 Mbps. 800 nos. of new hybrid microwave nodes have been installed along with up gradation of existing 914 microwave Hops.

Up-gradation of 3G Network in Mumbai:

To improve network capabilities and provide better speed MTNL has upgraded its existing 3G network comprising of 720 Node-Bs in Mumbai. The backhaul network has also been improved by upgrading 497 nos. of existing 8 Mbps Microwave Hops to 400 Mbps capacity.

The upgraded network with increased network coverage and backbone capacity helps in providing high speed data to the customers leading to customer retention, increased usage and increase in revenue.

Convergence of Core Network of Delhi and Mumbai: MTNL took initiative to have common core of 3G network for Delhi and Mumbai. This resulted into saving of opex of Rs. 96 crore and help in reducing Opex on annual basis in terms of AMC cost and staff Cost.

Core network of Delhi and Mumbai has been converged by migrating the core elements of Mumbai Network to Delhi. The convergence lead to significant improvement in resource utilisation and reliability of network. With this convergence Mumbai network will also be able to utilise the benefits of upgraded core network of Delhi.

Trial for E-Band Spectrum: In order to meet growing data traffic demand, MTNL is exploring the use of E Band spectrum to provide Backhaul connectivity upto 2Gb for 3G/4G Network and intend to carry out testing for the same. MTNL has tied up with Nokia for the same and application for experimental license has been submitted to WPC.

Trial for V-Band Spectrum: In order to meet growing data traffic demand, MTNL is exploring the use of V Band spectrum for last mile Access for high speed Internet in FTTH Network and intend to carry out testing for the same. MTNL has tied up with Qualcomm for the same and application for experimental license has been submitted to WPC.

Redeployment of DSLAMs near to subscriber premises: MTNL has launched a special program to redeploy the broadband nodes (DSLAMS) 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 192 in Mumbai till 31st October 2019. This has improved customer experience and reduced the number of complaints.

Fibre to the Home (FTTH): MTNL has formulated a new policy to engage partners on revenue share basis to extend its FTTx services. Many partners have been roped in to offer the high speed broadband services on fibre. This will help in increasing reach of FTTH customers through the existing infrastructure without incurring any significant extra expenditure and by utilizing the capabilities of these revenue share partners leading to acquisition of more FTTH customers and the revenues. Upto October 2019 in the Financial year 2019-20, 9388 FTTH subscribers have been added.

To further augment FTTH Network, following OLT & ONT/ONU have been installed:

a. 3 GEPON OLTs with 125 ONUs for Delhi and 2 GEPON OLTs with 100 ONUs for Mumbai

b. 3 GPON Mini-OLTs with 200 ONTs each for Delhi & Mumbai

c. 3 GPON OLTs & 1500 ONTs for Connaught place, Delhi

d. A rate contract for 2 years has been awarded to provide GPON Mini-OLT & ONT for Delhi & Mumbai as per requirement basis.

e. ONT – 5000 Nos for Delhi & 2500 Nos. for Mumbai.

Refurbishing of Pillars and DPs: To improve the QoS parameters, refurbishing of Pillars and DPs has been planned in phased manner. 177 Pillar and 1669 DP in Delhi & 750 Pillar and 23991 DPs in Mumbai have been refurbished by MTNL upto October 2019 in 2019-20.

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.

Broadband Network:

a. Up-gradation of existing billing system has been completed in Delhi & Mumbai. MTNL is now able to offer more attractive plans to Broadband customers.

b. Procurement of 800 No. of VDSL modems is under progress.

c. Procurement of VDSL 2 DSLAM is under progress.

d. Bharat Wi-Fi Project: A project for Seamless and Interoperable Internet and Broadband Services has been initiated with other TSPs / ISPs and MTNL has completed the integration of AAA server of MTNL with other TSPs i.e. Vodafone, Idea, Airtel, BSNL, JIO and with ISPs it is in progress.

IPv4 to IPv6 Migration:

MTNL has implemented IPv6 on dual stack for wireline network for both Retail & Enterprise customers. MTNL website has IPv6 certification logo. MTNL Delhi wireless 2G network is IPv6 compliant after migration on new 3G packet core. MTNL Mumbai wireless network is also IPv6 ready as migration of Mumbai packet core to new packet core at Delhi and migration is over.

5.2.5 Utilization of 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 approximately 84 thousand sq. ft. of spare built up spaces in its buildings at Delhi & Mumbai. Now on consolidation basis 8.7 lakhs sq. ft. has been rented out so far by MTNL to various government controlled entities.

The financial of MTNL reveals a revenue of Rs. 167 crores (upto Sep. 2019) from rental income of its various spare Infra Assets and expecting a total revenue of more than 330 crores during the entire financial year 2019-20.

5.2.6 Joint Ventures and Subsidiary Companies:

(i) Mahanagar Telephone (Mauritius) Ltd.(MTNL):

MTML, a wholly owned subsidiary of MTNL, was set up in 2003 and provides GSM, UMTS and LTE(4G) services across the island of Mauritius. It also has ISP and ILD Licence and is providing services through these.

Recently it has started service in one of the remotest island of the country Agalega through satellite connectivity and is associated with a prestigious government project there.

The company has a market share of approx. 17% as on 30.09.2019 and has been in profit for the last 9 years. Total revenue of the company during the last financial year was INR 91.17 crore and the profit was INR 4.05 crore.

MTML has earned gross revenue of approx. INR 538 Million during April 2019 to Nov 2019 period of this financial year as against INR 589 Million in the corresponding period of the last fiscal, registering a fall of around 8.65 %. The fall in revenue is attributable to traffic and tariff reduction due to intense competition in a saturated market, change in customer usage pattern with majority of customers using data for ILD as well as local calls and loss in roaming revenue due to proliferation of Wi-Fi hot spots across the island.

In spite of downward trend, MTML has established its own brand CHILI in the Republic of Mauritius as trusted total telecom service provider. With more than 250 BTSs operating across the island the quality of service is to the satisfaction of customers. Colocation with other telecom providers for mobile network on revenue share basis 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 specially among youth.

There is more emphasis on enterprise customers and continuous increase in EBS revenue is visible. Fibre connectivity for strengthening the back bone network is also being put in place in collaboration with Bharat Telecom and CEB.

All the expenses of company are paid from its own internal resources with strategic financial planning. The Capex for procurement of plant and equipments is totally met from its own internal resources. There is no debt liability on the company. There is no legal court case or arbitration case pending against the company.

MTML is operating from its own building constructed from its own fund, situated at 63 Cyber city, in Ebene area which is considered as IT hub of Mauritius.

The company is managed by CEO, CTO, CFO and 9 more executives all are deputation from the parent company. Other operations are outsourced.

(ii) Millennium Telecom Ltd. (MTL):

Millennium Telecom Ltd (MTL) is a wholly owned subsidiary of MTNL, incorporated in February 2000 under the Companies Act 1956.

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. In 2014-15, the company turned into profit making company by System Integration and other ICT related business at pan India level. During the year under report i.e. 2018-19 the company has earned a revenue of Rs. 73,439,502/- as against Rs. 67,577.399/- last year. MTL earned a net profit of Rs.

64.07 Lakhs for the period ending 31st March 2019. 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 empanelled Business Development Associates (BDAs) for 10 years through Tender in the year 2016-17. MTL has reopened the window for Empanelment of Business Development Associates in MTL through open ended EOI. MTL has around 24 empanelled BDAs.

In 2018-19, MTL has worked on various projects including P2PRF connectivity (50 mbps) for Air India, FMS for campus wide wireless and wired LAN for Central University Haryana, GIS based Survey of District Meerut and Ghaziabad of UP for generating social welfare fund for labour's CESS , LAN-WAN Project along with email hosting solution of Thane Municipal Corporation(TMC), Communication server project (state of art voice solution) of CIDCO, LAN networking of Films Division of India, enhancing EPABX Solution for Insurance Institute of India.

Further, many new projects are in the pipeline including

a. GIS survey of various districts in Chhattisgarh with the help of modern GIS technologies
b. Setting up of Campus wide CCTV network at Institute of Engineering & Technology (IET), Lucknow.
c. SITC of equipment for providing Wi-Fi services and one year warranty & four year AMC at National War Memorial, India Gate Circle, New Delhi

(iii) 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 Rs. 50 Crores.

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 Rs.477 lakhs. 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.

a. The Ministry of External Affairs (MEA) has hosted Passport Sewa Project at MSITSL Data Center through M/s TCS.

b. The Directorate General of Employment & Training (DGE&T) in Ministry of Labour & Employment has hosted National Career Project through STPI at MSITSL Data Centre.

c. 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 Rs (Lakhs)	Financial Year period	Revenue in Rs (Lakhs)
2009-10	196	2014-15	422
2010-11	275	2015-16	534
2011-12	297	2016-17	540
2012-13	360	2017-18	579
2013-14	388	2018-19	573
		2019-2020 (Upto Sep-2019)	289*

MSITSL has hired consultant for expanding the Data Centre server farm area by around 1200 sq. ft as per Tier-III standard and expansion work is under process.

(* MSITS accounting system has been maintained on Quarterly basis)

(iv) 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 31st March, 2019. MTNL, along with TCL and TCIL, is in the process of exit from the Company.

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.

5.2.7 Human Resource: .

(i) Manpower:

The total employee strength of MTNL, including various employee categories, as on 30.09.2019 is 20143. Employees belonging to Scheduled Castes are 3600, which constitute 17.87% of the total employees. The total number of employees belonging to Scheduled Tribes is 550 which is 2.73% of total employees.

Manpower details:

Table 5.12 Staff position in MTNL

Group	Total working strength	SC	ST	Women	Persons with Disabilities
A	787	134	48	88	0
B	2156	325	51	434	15
C	11739	1749	181	3985	78
D	5457	1392	270	749	6
TSM	3	---	---	---	---
Total	20143	3600	550	5256	99

MTNL has endeavoured to fulfil the statutory requirements with regards to implementation of reservation policy for candidates belonging to SC/ST/OBC communities as well as physically challenged candidates.

(ii) Training:

At present MTNL has two state of the art training centers one located in New Delhi and other at Mumbai:-

a) The Institute of Telecom, Technology & Management (ITTM) Shadipur N. DELHI:

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'2019 to November'2019, total 799 Internal Trainees and 490 External Trainees (including Industrial Training and Industrial visits) were trained at ITTM.

b) Centre for Excellence in Telecom, Technology & Management (CETTM), Mumbai:

The Centre for Excellence in Telecom Technology & Management (CETTM), the ISO 9001-2015 certified training center is situated at Technology Street, Hiranandani Garden, Powai, and Mumbai. The efforts and the results, reiterate our commitment to the growth in terms of business, quality and customer satisfaction and the customers have always rewarded our good work by giving us the repeated business.

CETTM successfully trained 646 in-house personnel and 694 external personnel with an achievement of 6612 Trainee days. Total of 87 Programs were conducted from April 2019 to October2019.

5.3 REVIVAL OF BSNL AND MTNL

The Cabinet approved the revival plan for BSNL and MTNL on 23-10-2019. The revival plan inter-alia, includes the following measures for revival of BSNL and MTNL:

a. Reduction in the employee cost by offering VRS to the employees of age 50 years and above. The Voluntary Retirement Scheme (VRS) was offered by both BSNL and MTNL on 4th November, 2019 and was closed on 03.12.2019. The VRS is effective from 31.01.2020. Till the closure of the scheme, 78,569 employees of BSNL and 14,387 employees of MTNL had opted for the VRS.

b. Administrative allotment of spectrum to BSNL and MTNL for providing 4G services. Cost of spectrum (excluding GST) of Rs. 14,115 Cr for BSNL is to be funded through equity infusion by Govt of India (GoI) and of Rs. 6,295 Cr for MTNL by issue of non-cumulative preference shares to be subscribed by GoI. GST component of Rs 3,674 Crore (BSNL: Rs 2,541 crore, MTNL: Rs 1,133 Cr) is to be funded through Budgetary allocation from GoI.

c. Sovereign Guarantee Bonds of Rs 15000 Cr of tenure of ten years or more to be raised and serviced by BSNL/MTNL for the purpose of debt restructuring.

d. Monetization of land/building assets following DIPAM guidelines for asset monetization. The proceeds of asset monetization will be credited to BSNL/MTNL to service the debt, CAPEX and other requirements.

e. Monetization of tower and fiber assets using an appropriate model including leasing after considering the market conditions with the aim to maximize the returns.

f. In-principle approval for merger of BSNL and MTNL as per relevant rules/ guidelines of GoI. Meanwhile, MTNL to be made subsidiary of BSNL by transferring the Government shareholding of MTNL to BSNL, to derive the synergy in network operations and sales till the merger is complete.

5.4 ITI LIMITED (ITI)

ITI Limited was established in 1948 as the First Government Departmental factory of Independent India. Starting in the earlier era with the vision on attaining self-reliance in the field of 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 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 Plan

ITI has been into losses since 2002-03 mainly due to stiff competition under liberalisation policy for telecom sector. Company was referred to BIFR in 2004. The Cabinet Committee on Economic Affairs (CCEA), during February 2014, approved the Revival plan of ITI by fund infusion of Rs.4156.79 crore. This package consisted of Rs.2264 Crore in the form of equity for financial assistance in all the plants of ITI for implementation of new projects and Rs.1892.79 crore as financial assistance as grant-in-aid. Out of Rs.2264 crore, Government has released Rs.769 crore till 30.11.2019. The funds have been utilized for upgrading the manufacturing infrastructure at various Units of ITI to cater the need of emerging technologies in Telecom industry after detailed study of the market and demand for Telecom products and solutions prevailing now and expected in the Indian telecom market in future.

With the upgraded manufacturing infrastructure, ITI has successfully regained its core strength of manufacturing telecom products & solutions. Under Revival Plan the projects implemented are Defence encryption products, HDPE pipe manufacturing, OFC 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, Radio Modem manufacturing etc.

Highlights of Performance During 2019-20

A. Performance during 2019-20 (Audited)

ITI achieved a Turnover of **Rs. 705 Crore** till 30.09.2019 in 2019-20. ITI had posted the Turnover of **Rs. 1894 crore** & profit of **Rs.111 crore** (with other comprehensive income and without considering any Government grants) in FY 2018-19.

B. Order book position and expected order

The order book of ITI (balance orders) is about Rs. 6604 Crore as on 01.12.2019. In addition to this ITI has an advance purchase order worth Rs. 7155 crore. The Company has planned a turnover of Rs. 3898 Crore for FY 2019-20. About Rs. 7600 Crore order, for ASCON Phase IV project from Defence wherein ITI is L1, is expected shortly.

C. Optical Fiber Cable (OFC)

Anticipating increased demand for OFC in the country, ITI has established OFC plant at Rae Bareli with a capacity of 30,000 km per annum (24F). The established infrastructure is capable for manufacturing of OFC (24 F to 96 F) including ribbon type cable. Pilot Production of OFC has been made. ITI has received the required TSEC approval for manufacturing of OFC.

D. HDPE Duct

Anticipating increased demand for HDPE ducts in the country, ITI has established four lines of HDPE duct with a total manufacturing capacity of 14,000 KM per annum. Out of which, three lines have been established at Rae Bareli unit and one line has been established at Palakkad plant. This year ITI is executing order for manufacturing and the supply of HDPE pipe for 10000 KM.

E. 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 lying of approx. 16000 KM of OFC and establishment of network comprising DWDM, L3 switches, Fiber monitoring system, Data

Center and network operating Centre (NOC). The Project value is approx. Rs. 1417 crores. As on 12-12-2019 Trenching and Ducting work of 9323 Km has been completed. Optical Fiber Cable laying work of about 7208 KM has been completed. ITI has supplied in house manufactured 223 OLT & 3925 ONT's to GFGNL (GujNet) in FY 2019-20. As on 12-12-2019 Internet Broad Band connectivity's to 1667 Gram Panchayats has been established.

b) **MahaNet Project:** ITI is executing a turnkey project for provisioning of broadband connectivity across Maharashtra State. The project proposals of 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 Rs. 3111.67 crores. As of now OFC laying work of around 3100 Km lengths and Router installation for around 1421 Nos. of Gram Panchayats have been completed.

c) TPA (Third Party Audit) in Jharkhand:

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 against a Work Order of Rs. 5.76 crore.

d) TPA (Third Party Audit) in Odisha:

For 30 Districts (presently 264 Blocks/ 2983 GPs) of Odisha, Odisha Power Transmission Corporation Limited (OPTCL), a state-owned Transmission Utility has been assigned the project. ITI is working as TPA –Tier I in this project for Work Order of Rs. 12.30 crore.

F. Solar panel manufacturing

Looking in to demand of solar energy requirements in the country, ITI has set up 18 MW capacity plant at Naini unit. ITI manufactured and supplied 4500 Nos. of 60 W solar panels for BharatNet Ph. I project during 2018-19. ITI has received a Letter of Intent (LOI) for Solar based LED Street lighting system from EESL for the supply to Uttarakhand worth Rs 37 crore. ITI was also L1 for a similar project in Chattisgarh. ITI Naini has signed Agreement with technology partner for setting up 10 MW Solar Power at Naini Plant for sale of Power to 3rd party and 500 KW for in-house utilization by Naini Plant. ITI has participated in another RFP with Uttar Pradesh New & Renewable Energy Development Agency (UPNEDA) for Grid connected Solar Power Plant of range, 1 KW to 10 KW of total capacity 250 KW worth Rs 1.3 crore. ITI is executing an order for manufacturing and supply of 20,000 Nos of Solar panels.

G. Telecom testing labs.

As per Mandatory Testing and Certification of Telecom Equipment (MTCTE) guidelines issued by DoT, every telecom equipment must undergo mandatory testing and certification prior to deployment in the network in India. 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. EMI/EMC lab (follows CISPR, MIL and IEC 61000 standards) and Safety labs (follows IEC 60950 standards) are already commissioned.

H. Start-up hub (VINYAS)

As part of Start-up India mission of Govt. of India, ITI is in the process of establishing 1000-seater Start-up hub at ITI Bangalore plant for encouraging start-ups in the country. 125-seater Start-up hub, having amenities like dedicated corporate hub meeting room, demo room, highly secure Wi-Fi connectivity, is already functional. Start-up hub customers can also utilize our manufacturing facilities like PCB, SMT, Fabrication, Telecom testing labs and 3D printing to enhance their operations from this facility. Currently Start-ups in Technology domains like Consumer Electronics, Aeronautics, Medical Electronics, Additive Manufacturing and IOT have occupied 70 seats.

I. Expansion of Data Center

ITI has been operating Tier-3 complied (with uptime 99.982%) Data Center 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 Center 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 investing Rs. 200 crore. for establishment of another 1000 racks capacity in the same campus. In addition to the existing services, secured cloud services like SaaS, PaaS and IaaS will also be offered. Thus the Data Center will provide the end to end IT solution to its customers. Data Center is one of ITI's endeavours to provide customer-centric services to Government organizations, Corporates and Start-ups.

J. Smart Energy meter

Smart energy meter allows two way communications between energy distributers and consumers and has features like remote load connect / disconnect anti-tampering, demand management, gathering real time information, remote firmware upgrade etc. The product conforms to the technical specifications outlined for Advance Metering Infrastructure (AMI) and is compatible with Smart Grid Communication technologies and supports distributed generation and can be used in single/three phase connections.

ITI is currently executing the EESL order for the supply of Smart Energy Meters complying to IS 16444 standards and technical specifications outlined for Advance Metering Infrastructure - AMI .

Infrastructure for the Manufacturing and Testing is now ready at Palakkad as well as Bangalore for the bulk manufacturing, testing and supply of smart energy meter as per the requirements of customers. Both the units have received type approval and BIS certification for Single phase Smart Energy meters and has started the manufacturing and supply of meters to various DISCOMs in UP and Haryana. Type test for Three Phase Meter is in progress.

K. Smart Banking Card Project – Rupay / MasterCard certification

ITI Palakkad unit has the state of the art infrastructure in line with technical specifications for Payment Card Industry (PCI). The infrastructure includes modern manufacturing equipment for Assembly (milling & embedding) and personalization. The monthly production capacity is 12 Lakhs banking cards (Debit/Credit).

ITI got accreditation for Rupay chip card personalization from NPCI and MasterCard certification from MasterCard. VISA certification is also under process. With this, ITI can address the requirements of new Govt. initiative of National Common Mobility Cards (NCMC).

L. ITI entered into TOT for Wi-Fi AP manufacturing in ITI

ITI has entered into Technology Transfer agreement 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. ITI is in the process of execution of an order for manufacturing and supply of 25,000 Access points.

M. Contract manufacturing

ITI plants have established new State of the Art PCB Manufacturing facility, SMT Assembly line, Advanced Injection Moulding facilities, Sheet Metal Fabrication (for electronic racks, Chassis etc.) and 3D printing facilities to cater to the needs of various divisions within ITI as well as Customers like M/s C-DoT, M/s CDAC, M/s BEL, M/s ISRO, M/s ADA and other private customers.

N. 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.

O. 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.

P. 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. The facility is further expanded in 2018 with the inclusion of Screening of assemblies and sub-assemblies known as Test & Evaluation (T&E) also.

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.

Q. R&D activities for development of new products

In financial year 2019-20 R&D has successfully developed products and solutions like Integrated Selection System, High speed Radio System, Encryptors for defence network, Secure FAX, Network solutions for Communication Network, Power supply modules. R&D has initiated development of new products like Satellite receivers for Defence, Development of High Capacity Radio Relay, Power aggregator, 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. Major products developed by R&D which have been productionized are Primary MUX and Spares, Encryption products for DCN networks, Field Telephones (Teleset 5C)/Nutan, Executive Telephone System (ETS-04).

R. NFS OFC cable laying

ITI has been executing contract for 13500 KMs OFC cable laying work under NFS (Network For Spectrum) project for the defence forces of India which involves Procurement, Supply, Trenching, Laying, Installation, Testing and Maintenance of Optical Fiber Cable, PLB Duct and accessories for construction of exclusive Optical NLD backbone and Optical access routes on turnkey basis with AMC in the Eastern and North- Eastern region of the country. ITI has successfully completed 86% of the work and the project is in the final phase of completion.

S. AMC services 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.

T. AMC for ASCON

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 will be continued to be maintained by ITI for next one more year.

U. 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 and allied business for various State and central Govt. departments. MSPs have achieved a turnover of Rs. 151 crores as on 30.11.2019 during 2019-

20 and many tenders and business proposals are in pipeline. MSP Karnataka has received an order worth Rs. 420 crores from Orissa Govt. Education Dept. for implementation of ICT labs and IT infrastructure in schools.

V. 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 center 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.

W. IMPLEMENTATION OF PCMM/PMMM IN ITI

ITI is in the process of implementation of People Capability Maturity Model (PCMM) and Project Management Maturity Model (PMMM) in the organization. During 2019-20 the company is attempting to achieve Level 2 for PCMM and PMMM. The internal audit and assessment is under process.

PMMM helps organizations addressing fundamental aspects of managing projects, achieve quality results and reduce the likelihood of risks impacting projects adversely.

PCMM helps the Organisation in describing the maturity of employee practices, integrate employee development with process improvement, and establishes a culture of excellence and continuous improvement.

5.4.2 Details of Achievements for the Last Three Years

Table 5.13 Details of Achievements for the last three years (Rs. Crore)

Sl. No	Product/Project	Performance 2017-18 (Audited)	Performance 2018-19 (Audited)	Provisional Performance till 30th Nov. 2019-20	Anticipated performance 2019-20 (Till 31st March 2020)
1	NFS cable laying	267.11	274.94	74.53	265.09
2	Corp Mktg & MSP	200.11	413.89	150.86	978.3
3	Defence/ASCON	127	121.51	64.62	163.85
4	MLLN, MLLN AMC /SSTP	185.66	72.48	25.50	41.5
5	GSM-WZ Project/AMC	34.46	27.61	0.00	0

6	GSM-SZ / AMC	153.32	46.08	32.54	43.04
7	NPR/SECC Projects	122.03	0	0.00	0
8	NGN /C5 /Ph2	3.55	6.98	3.50	7.5
9	OCB AMC Business	28.05	20.23	10.86	16.17
10	G-PON	391.96	55.2	0.07	0.17
11	Misc. Services/GSM Franchise	7.8	4.22	2.00	1.5
12	Data Centre	17.88	19.28	9.30	12.5
13	Banking / Div. Prod./cont. Mfg./Srinagar services/ TPA	7.25	24.15	6.77	6.14
14	SMPS & Repair	5.81	11.55	2.61	9.61
15	SATCOM & PCM MUX, CDOT AN RAX	15.21	8.01	0.00	0
16	HDPE	0.48	0	0.01	20
17	Solar Panel Mfg.	0.72	0	0.00	30.3
18	GujNet	0	13.31	421.63	996.95
19	GujNet O&M	0	0	0.00	30
20	MahaNet	0	426.19	67.24	516.57
21	Wi-Fi Hotspot	0	37.04	1.26	7.76
22	Smart energy meter	22.2	30.84	1.50	70
23	Micro PC/ Comp Screening/ Set top box/ LED street lighting/ E-governance/ Aadhar Business	55.84	6.51	12.50	46.22
24	OFC	0	0	0.00	12
25	NGN manufacturing (UTSTAR)/ CPAN	56.67	234.86	0.00	0
26	CCMS/Online RPF Exam	0	39.14	15.29	14.93
27	Smart Card	0	0	0	8
	TOTAL	**1703.11**	**1894.02**	**902.59**	**3298.1**

Note: The performance includes Tax

Capital Structure

The Authorized Share Capital of the Company as on 30th September, 2019 was Rs.3500 Crs (Rs. 2800 crore for Equity and Rs. 700 Crs for Preference shares) The paid-up Share Capital as on

that date was Rs.897 Crs. (89.7 crore equity shares of Rs.10/- each). The percentage share of Government of India in equity as on 30th September, 2019 is 89.97 %.

Breakup of Equity share holding pattern as on 30.09.2019

Table 5.14				
S.No.	**Name of shareholder**	**Number of shares (Face value of Rs 10 each)**	**Amount in Rs**	**% of Total number of shares after proposed allotment**
1	President of India	806987500	8069875000	89.97
2	Government of Karnataka	312500	3125000	0.03
3. a	Special National Investment Fund	69480690	694806900	7.75
3. b	General Public	20219310	202193100	2.25
	Total	**897000000**	**8970000000**	**100**

Financial Performance,revenue and taxes

Table 5.15 Performance During the Year (Rs in Crores)			
Particulars	**2019-20 (Till September 2019)**	**FY 2018-19**	**FY 2017-18**
1. Total Revenue & Other income	603	2005	1812*
2. Expenditure	657	1912	1581
3. Net Profit/Loss	**(54)**	**93**	**231**
Note: * Turnover & other income includes Excise Duty, With Govt. grant of Rs. 132.98 Crs (17-18).			

Table 5.16			
Particular	**2019-20 (Till Sept. 2019)**	**2018-19**	**2017-18**
Total Revenue	603.40	2004.84	1811.62
Add: ST & GST	128.32	225.67	272.83
Total Income (A)	**731.72**	**2230.51**	**2084.45**
Total Expenditure	657.80	1912.30	1581.05
Add: ST & GST	128.32	225.67	272.83

Total (B)	**786.12**	**2137.97**	**1853.88**
Profit C = (A-B)	**(54.40)**	**92.54**	**230.56**
Note: Due to the implementation of IND AS during finalization of 2017-18 accounts some financial figures got restated.			

Table 5.17

Particulars	2019-20 (Till Sept. 2019)	2018-19	2017-18
Excise duty ,Service tax & GST	128.32	225.67	281.85

5.4.3 Key Activities and Events

ITI Limited Observes Public Sector Day

ITI Limited observed Public Sector Day across ITI Plants/Units on April 10, 2019. Public Sector Day celebration is an initiative of Standing Conference of Public Enterprises (SCOPE). ITI Limited observed Public Sector Week from April 10 to 16, 2019 by displaying banners and posters in the plant premises at Naini, Palakkad, Rae Bareli and Mankapur.

Shri Sanjay Dhotre, Hon'ble MoS in the Ministry of Human Resource Development, Communications and Electronics & Information Technology, Government of India visited ITI Limited on November 12, 2019.

Shri Sanjay Dhotre, Hon'ble MoS in the Ministry of Human Resource Development, Communications and Electronics & Information Technology, Government of India inaugurated Wi Fi Production Facility and Crypto Lab in the presence of Shri R M Agarwal, CMD, ITI Limited, Shri S P Gupta, Director (HR), Shri D. Venkateswarlu, Director (Production) and senior officers on November 12, 2019 at ITI Limited, Bangalore Plant.

ITI Limited Celebrates World Telecommunication and Information Society Day ITI Limited celebrated 50th anniversary of World Telecommunication and Information Society Day on May 24, 2019 at ITI Bangalore Plant, Bengaluru. Shri K Alagesan, CMD, ITI Limited, Shri R M Agarwal, Director (Marketing), Shri Y Muralidhar, GM-BG & R&D, Unit Head, BG Plant, Shri A K Bajoria, GM-NS, NS Unit and Chief Guest Shri Srikanth Chandrasekaran, Senior Director, Standards & Technology, Institute of Electrical and Electronics Engineers (IEEE) were present on the occasion. Shri Srikanth Chandrasekaran delivered a keynote address on the theme 'Bridging the Standardisation Gap' and spoke on the issues and benefits of various standardization initiatives.

ITI Limited commemorated 128th birth anniversary of Dr. B R Ambedkar at ITI Bangalore Plant on May 8, 2019 organized by ITI SC/ST Employees' Welfare Association, Bengaluru. Shri K Alagesan, CMD, ITI Limited, Shri R M Agarwal, Director (Marketing), Shri Shashi Prakash Gupta, Director (HR), Shri Y Muralidhar, GM-BG & R&D, Unit Head, Bangalore Plant, Shri A K Bajoria, GM-NS, NS Unit, Smt E K Jayasree, GM-Mktg, Chief Guests, Shri D M Ezhil Buddhan, GM (Broadband Networks, Network Operation Centre), BSNL and Dr. S R Keshava, Professor, Bangalore University were present on the occasion. The programme was inaugurated by lighting the lamp followed by floral tributes to the portrait of Dr. B R Ambedkar by the dignitaries.

ITI Limited observed World Environment Day (WED) across its Plants/Units on the theme 'Air Pollution' on June 5, 2019. The Day was observed to create awareness about environmental importance, supporting action and driving the change for the protection of environment for everyone. Shri R M Agarwal, Director (Marketing) highlighted the significance of the day and urged all the employees to grow more trees in their surroundings to

reduce pollution, to improve the quality of air, minimize the use of plastics. On the occasion Shri R M Agarwal planted a sapling followed by plantation of saplings by Shri K V Suresh, GM-PP, Shri T Krishnadas Rai, AGM-HR & PR, Shri Subhasis Som, AGM-V and other senior officers.

ITI Limited observed National Fire Service Week across its Plants/Units from April 14 to 20, 2019. National Fire Service Week is observed in memory of brave firefighters, who had sacrificed their lives in the line of duty in a rescue operation in Mumbai on April 14, 1944. As part of National Fire Service Week celebration, ITI Corporate Office organized a fire fighting training program for employees to create awareness of fire, its hazards and prevention on April 19, 2019.

ITI Limited observed 48th National Safety Week celebration from March 4 to 10, 2019 across all its operating units on the theme 'Cultivate and Sustain a Safety Culture for Building Nation'. The weeklong campaign organized by the company was aimed at ensuring healthy, safe and aware workforce.

ITI Limited organized Swachhata Pakhwada to create awareness of cleanliness and hygiene among the employees at corporate office and across its plants/units as per the guidelines of Department of Public Enterprises (DPE) from August 16 to 31, 2019.

ITI Limited Observed Vigilance Awareness Week from October 28, 2019 to November 2, 2019 with the theme "Integrity- A Way of Life" across ITI Units/ Plants by administering Integrity pledge to eliminate corruption.

Shri A Gnanasekaran, CVO, ITI Limited flagged off the rally

In order to reach out to the public and to create awareness against corruption, Shri A Gnanasekaran, Chief Vigilance Officer flagged off a rally "WALKATHON" on October 30, 2019. Senior officers, employees of ITI Limited and over 200 students of ITI Central & Vidya Mandir School participated in the rally.

ITI Central and Vidya Mandir School taking out Vigilance Awareness Rally

AWARDS

ITI Limited has won India's Most Trusted Companies Awards 2019 in the telecom equipment manufacturing segment. Shri K Alagesan, CMD, ITI Limited received the award from International Brand Consulting Corporation at the IBC Most Trusted Companies Awards 2019 Ceremony on August 11, 2019 at Hotel Hyatt Regency, New Delhi. India's Most Trusted Companies awards criteria is based on research conducted by International Brand Consulting Corporation, USA upon the parameters such as overall market share, innovation, workplace culture, leadership, business ethics, governance, corporate social responsibility, reputation, etc.

ITI Wins National Safety Awards

ITI Limited has won the prestigious National Safety Awards for the Performance Year 2017 for maintaining Industrial Safety at ITI Mankapur Plant and ITI Bangalore Plant. ITI Mankapur Plant has conferred the award during the Performance Year 2017 in two categories for outstanding performance in Industrial Safety as Runner-Up in achieving Accident Free Year and in achieving Lowest Average Frequency Rate. ITI Bangalore Plant has conferred the award for outstanding performance in Industrial Safety as Runner-Up in achieving Accident Free Year during the Performance Year 2017.

5.4.4 Human Resource

5.18 Manpower strength as on 1st December 2019					
Group	**Total Working Strength**	**SC**	**ST**	**Women**	**Person With Disabilities (PWD)**
Officers	2624	401	50	358	34
Non-Officers	896	193	8	148	9
Total	3520	594	58	498	43

The Company employed about 3520 employees (Executives – 2524 & Non-Executives – 896) as on 1st December 2019. About 20.76% of the employees are having professional qualification in the field of Engineering, Finance, Human Resource and Medical, around 10.08% are graduates and post graduates, 18.97% were Diploma Holders and 33.49% are Trade Certificate holders and 16.67% others.

5.4.5 Schemes for SC/St Employees, Differently Abled Persons and Women 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

The Facilities provided to Differently Abled Persons:

- PWD employees who are residing in the township are given special allowance at the rate of 5% of Basic pay subject to maximum of Rs.75/- per month
- Those employees who are not residing in Company's township but are utilizing Company's Transport for commuting between residence to factory are given special allowance at the rate of 5% of Basic Pay subject to maximum of Rs.100/- per month.
- PWD 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.
- PWD employees are allotted quarters on out of turn basis

- 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.
- 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

The Facilities provided to Women Employees are as follows:

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

Budget Allocated and Expenditure Incurred : There is no specific budget allocation for expenditure on schemes for SC / ST employees and Persons With Disabilities. However, as and when expenditure is required to be incurred, specific approval of Competent Authority is obtained.

Industrial Relations: The Industrial Relations scenario in the Company was cordial during the year. Employees' Union and Officers' Association extended their co-operation and support in ensuring smooth workflow to meet the Company's objective.

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 (G-PON, PLB HDPE pipes, OFC networks, Smart City, IoT and 5G technologies) besides leadership development, Mentor Development and ERP, etc. Also, customised programmes at premier institutions like IIM's, IIT's and also Training on People Capability Maturity Model (PCMM), Project Management Maturity Model (PMMM) were conducted through Video conference. Further, Executives and Managers have been trained in special DPE-sponsored programmes. Training programmes were also organized in-house on Technical, IT, Safety, awareness programmes on Health, Environment, etc.

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 2019 to October 2019 are as follows:

Employee Training: In-house and External Nominations:

Table 5.19

No. of Training Programmes	No. Trained			No. of Training Man-days Achieved			Total Expenditure (Rs.)
	Exe.	Non-Exe.	Total	Exe.	Non-Exe.	Total	
43	672	254	926	1412	356	1768	1504799

Skill Development Training: As a part of 'Skill India' Flagship programme, ITI started imparting Skill Development and Capacity Building training at various plants of ITI. During 2019-20 FY, 1479 students have been trained in telecom skill development training, out of which 254 trained in TSSC/ESSCI/other Job Roles and 1225 have been trained in ITI modules. Skill development training is being imparted in the following Job Roles- Optical Fiber Technician; Optical Fiber Splicer; PCB Fabricator; Circuit Image Operator (PCB Manufacturing); Field Technician-Computing & Peripherals; Domestic Data Entry Operator, Fashion Designing, Medical Lab Technician, Skill Development training under TSCCDCL and BSS Support Engineer.

In addition to the above, ITI is also engaging and imparting training to Graduate Engineers, Diploma (Technicians) and Trade Apprentices in various trades under the Apprentices' Act/ National Apprentices Promotion Scheme(NAPS). Also as a part of CSR and capacity building, the Company is imparting training to the students of Engineering/ Management to carry out their Internship and Project.

Official Language: 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.

The Progress of Implementation of Official Language in Corporate Office as well as in all subordinate Units/MSP is being periodically reviewed by the OLIC of corporate office.

Units/MSP at Naini, Rae Bareli, Mankapur, New Delhi, Mumbai, Lucknow & Corporate Office have been notified in the Gazette of Government of India under the OL Rules 10(2) & (4), 1976 after more than eighty percent (80%) of the staff working knowledge of Hindi in these Units/MSP.

ITI Limited, Corporate Office is regularly sending the Quarterly Progressive Report to the Ministry as well as Dy. Director (Implementation), Regional Implementation Office, Bengaluru. Corporate Office at Bengaluru has been awarded third prize for "Best Performance" in the official Language Implementation by TOLIC, Bengaluru.

In order to enhance working knowledge of Official Language of employees, internal training programs are conducted with support of internal/external faculties. Besides, employees are also encouraged to take part in Hindi Prabodh, Praveen & Pragya examinations for which financial incentives are given to qualified employees.

"Hindi Fortnight" was organized in the year 2018-19 in all the Units and various events were organized during this fortnight. Employees of Units/MSP also participated in their respective TOLIC and won different awards. Bilingual (i.e. English and Hindi) website of the company is being regularly updated.

Right to Information: Since introduction of the Right to Information Act, 2005, a mechanism has been drawn to process all requests received by Corporate Office/Units under the Act. The Units and Regional Offices have designated PIOs / APIOs with CPIO, Appellate Authority and Transparency Officer at the Corporate Office. ITI has been processing and replying the RTI applications with complete transparency and accountability according to RTI Act. The RTI requests and responses are uploaded and published on ITI website. Quarterly online RTI returns are uploaded on CIC portal and also same are published on our Company website. All cases referred to CIC by applicants as second appeals have been successfully addressed and complied in totality to CIC decisions. During the year 2018-19, 269 RTI requests have been received. Information was provided for 275 RTI applications for year 2018-19 including previous years carried forward 8 RTI requests, and 2 RTI requests were rejected.

5.5 TELECOMMUNICATIONS CONSULTANTS INDIA LTD (TCIL)

Telecommunications Consultants India Ltd. (TCIL) is a certified Mini Ratna Category-I, 100% owned Govt. of India Undertaking providing consultancy, implementation services and turnkey project execution services in the field of Telecommunications, IT, Power, and 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 systems, etc. TCIL has a rich experience of having executed projects in 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, Far East, Middle East, Africa, Europe and USA. TCIL has also set up its 100% subsidiary in USA on clearance by the Union Cabinet of India to form a 100% owned 'C' Corporation in 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.

Additionally, TCIL offers services from concept to commissioning in setting up Smart cities, Homeland security projects and Integrated Private Security. 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, impacting more than 2.5 million young students. Under the PAN Africa Network Project, TCIL provided Tele Education and Tele Medicine services to 49 African nations connecting African universities and hospitals with Indian universities and super specialty hospitals. The same is being done in the SAARC countries as well.

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 to simulate real-time scenario.

Another noteworthy initiative is the TETRA project - Terrestrial Trunked Radio over traditional PMR (Professional Mobile Radio). **TCIL has the unique honor of having worked on the world's largest TETRA project during the Common Wealth Games 2010** on "Secured Communication Network Terrestrial Trunked Radio. This was implemented in a record time of nine months. More projects have been undertaken since then with several state governments.

TCIL has been a pioneer in setting up Next Generation Wireless Services like 5G, VOIP, VOLTE and Mobile applications in rural markets and in remote areas with geographically difficult terrain such as Arunachal Pradesh, J&K and others. A profit making PSU (Public Sector Undertaking), TCIL is constantly trying to improve the lives of people in India and in its various operations across the globe. A feather in TCIL's cap is the construction of a first-of-its-kind REC World Headquarter Building at Gurugram, designed in compliance with 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.

Currently Sh. Rajiv Gupta, has taken additional charge as CMD TCIL after the superannuation of Sh. A S Rao.

5.5.1 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
- Railway Signaling Projects
- 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
- e-Procurement Services through the TCIL's own portal
- 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
- Solar Power, e-Waste Management and Power Line Projects,
- Internet of Things (IoT), Services on Fibre, Artificial Intelligence (AI)
- Skill Development, Data Security and Cyber Security
- Smart Cities and Experience Centers across India
- Offering value added service through empanelment of Startups, MSEs and Business Associates

5.5.2 Performance Highlights: TCIL achieved total revenue of Rs. 1622.22 Crores during FY 2018-19. The profit after tax was Rs. 43.90 Crores. The company has achieved Provisional turnover of Rs. 1156.47 Crores up to December 2019 for FY 2019-20. Order booking for 2019-20 is Rs. 3614.96 Crores upto 31.12.2019. However as per RBE 2019-20, the estimated turnover for FY 19-20 is Rs. 1903 Crores.

- In Myanmar, TCIL completed a project installing 1.5 Gigabit Microwave Radio System on Rihkhawadar – Mindat route for Myanmar Posts and Telecommunication (MPT) for a total value of USD 6.04 Million.

- eVBAB Project was launched by Minister of External Affairs on 7th Oct 2019 . MOU's with 15 African countries have already been signed by TCIL.
- ICT @Schools project is being executed by TCIL in Several states . It has received enormous recognition by the Chief Minister , Uttarakhand Govt. as TCIL had set up 150 virtual classrooms in record time under the scheme.
- EWDS (Early Warning Dissemination System) devised by TCIL was successful in minimising loss of life and numbers of affected people to a minimum during Odisha cyclone FANI. A record 1.2 million people (equal to the population of Mauritius) were evacuated in less than 48 hours. Major technologies used in the EWDS system are: Alert Tower Siren System, Digital Mobile Radio (DMR), Mass Messaging System which include Group Based Alert SMS (GBAS) system and Location Based Alert SMS system (LBAS), Satellite communication (Satellite Based Mobile Data Voice Terminals) and Universal Communication Interface (UCI).

TCIL has received several accolades due to the project.

Book Order: International

- Work awarded in KSA by Ericsson and Nokia Al Saudia for the supply of Technical Manpower on consultancy basis for the total value of SRs 4.16 Million (Rs. 7.66 Crores).
- Work awarded in KSA by Ericsson the supply of Technical Manpower on consultancy basis for the total value of SRs 21.57 Million (Rs. 40.23 Crores).
- Work awarded in KSA by Integrated Telecom Company the Implementation of OPS Project on turnkey basis for the value of SRs 4.0 Million (Rs. 7.46 Crores).
- Work awarded in KSA by Ericsson the supply of Technical Manpower on consultancy basis for the total value of SRs 1.90 Million (Rs. 3.52 Crores).
- Work awarded by Mauritius Telecom for the Supply of Overhead cable 2 core and access networks multi order maintenance contact for the total value of MUR 7.67 Million (Rs. 1.52 Crores).
- Work awarded in KSA by Integrated Telecom Company (ITC) the OSP project on turnkey basis for the total value of SRs 3.26 Million (Rs. 6.03 Crores).
- Work awarded by Mauritius Telecom for recovery of unused underground & aerial copper cables and accessories for the total value of MUR 20.50 Million (Rs. 4.06 Crores).
- Work awarded by Mauritius Telecom for Access Network Multi Order Maintenance Contract and FTTH subscriber connection works for the total value of MUR 33.82 Million (Rs. 6.73 Crores).

- Work awarded by Chinese Communications Services (CCS) for ITC NBB Project (15 Cabinets) for the value of SRs 12.93 Million (Rs. 23.92 Crores)
- Work awarded by Kuwait Fire Service Directorate, Kuwait University and misc. clients for the Fiber Optics Works for the total value of KD 0.94 Million/- (Rs. 21.76 Crores).
- Work awarded in KSA by Ericsson, CBRE, Nokia Siemens Saudia and Shabakkat for technical manpower supply on consultancy basis for the value of SRs 16.908 Million (Rs. 31.27 Crores).
- Work awarded by Oman Broadband Company for the FTTH network construction in Salalah Al Wadi Dhofar and Suwaiq Al Batha Batina for the total value of OR 1.253 Million (Rs. 22.93).
- Work awarded in KSA by Ericsson, Etihad Etisalat Company (mobily) and CBRE for technical manpower supply and OSP Works for the total value of SRs 13.44 Million (Rs. 24.87 Crores).

National

- Work awarded by Andhra Pradesh Tribal Welfare Residential Institutions Society for implementation of 22 Virtual & 561 Digital Classrooms for the value of Rs 19.40 Crores.
- Work Awarded by RUSA, Government of Andhra Pradesh for the Supply of 40 Digital Lab equipment for 40 Degree Colleges in RUSA 2.0 Colleges, Supply and Installation of 1 no. of Virtual classroom and 40 no. of University/ Institute Management Application the total value of Rs. 12.28 Crores.
- Work awarded by USOF DoT for Engagement of NIOT, Chennai for marine supervision of coral related areas during CANI Project the value of Rs 2.0 Crores
- Work awarded by Chhattisgarh Tourism Board for the Development of Camping site at Village Tirtha, Chitrakoot, Dist. Bastar, Tandoola and Balod, Chhattisgarh for the value of Rs. 50.00 Crores.
- Purchase Order Awarded by Kendriya Vidhyalaya Sangathan, New Delhi for the Annual Maintenance Contract of all e-classrooms established in Kendriya Vidyalayasfor the total value of Rs. 17.50 Crores.
- Work awarded by Department of School and Mass Education, Govt. of Odisha for Implementation of Smart School set up & ICT in schools of Odisha for the expected value of Rs. 300.00 Crores for five next years.
- Work awarded by Chhattisgarh Tourism Board for the Construction of Tourist Resort on 20 acres land at Malhar, Chhattisgarh for Rs. 10.00 Crores.
- Work awarded by Universal Service Obligation Fund (USOF), Department of Telecommunications

for Independent Monitoring Agency for CANI Submarine Cable Project for the value of Rs. 12.09 Crores.

- Work Awarded by Navodaya Vidyalaya Samiti for the Construction of Special Repair works at JNV, Agra (UP) for the value of Rs. 4.92 Crores.
- Work awarded by Navodaya Vidyalaya Samiti for Construction of Phase-A work at JNV, Badaun and Construction of Phase B work at JNV, Sitapur II on consultancy basis for the total value of Rs. 40.29 Crores.
- Work Awarded by Chhattisgarh Tourism Board for the repairing and denting works of self operated units, balance works at Rest House, Ramjharna Botalda, Distt. Raigarh, development works in Dandkaranya Circuit (Sheorinarayan, Malhar, Rajim) and for Development of Eco Tourism Circuit (Hasdeo Bango, Khuntaghat, Ghonga, Kodar, Tandula, Maramsilli, Dudhawa, Kosarteda, Dalpat Sagar for the total value of Rs. 172.44 Crores.
- LOI awarded by Kerala State IT infra Ltd (KSITIL) for Project Management Agency for KFON Kerala Fiber Optic Network for the total value of Rs. 20.00 Crores.
- Work Awarded by BOCW Welfare Board Uttarakhand for labour cess collection- Collection of revenue for the total Rs. 14.18 Crores.
- Work awarded by Osmania University, Telangana for the Supply and Implementation of University Management Solution for the Rs. 10.00 Crores.
- LOA awarded by Delhi Transport Corporation for the Supply, Installation, Testing, Commissioning and Maintenance of CCTV Surveillance System in the 5000 buses.
- Work awarded by BSNL for consolidation of existing CDR Data Centers and NIB-P3 Data Centers with state of the art Data Centers valuing Rs. 1215.42 crores.
- Implementation of Package-C of Telangana Fiber Grid Project in the State of Telangana for Phase – I valuing Rs. 1492.54 crores.

5.5.3 Human Resource Management

The enterprise employed 870 employees as on 31.12.2019. The retirement age in the company is 60 years. Category wise employment status for last 3 years is given in the table.

Table 5.20 TCIL - Category wise employment status (Number) (Regular + Deputation)			
Particulars Nos	2019-20 (As on 31.12.2019)	2018-19	2017-18
Executives	408	406	402
Non Executives	462	445	437
Total Employees	870	851	839

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 124 numbers of Women are employed.
- At TCIL, providing a friendly workplace for our employees and safety & security measures for the employees are strictly enforced ensuring equal opportunities to all our employees. As a welfare measure for Women employees, various benefit schemes are incorporated in TCIL. The positive results of the welfare measures are evident from the increase of women employees in the managerial and supervisory category. Separate rest rooms are available for women on each floor.
- Women employees are today holding some of the higher management/ executive posts in TCIL and are involved in decision making process. 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.

Schemes for Benefit of SC/ST category

- Reservation guidelines are followed for SC/STs 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.

- Organize the training programmes from time to time.
- An SC/ST 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 where possible.
- TCIL has executed various programmes for the Welfare and Socio-Economic Development under CSR Schemes.
- Keeping in view the reservation guidelines, if sufficient number of SC/ST posts are not filled up through Direct Recruitment, the steps are being taken continuously by TCIL to clear the backlog through "Special Recruitment Drive".

Schemes for benefit of Persons with disabilities

- Concessions in service conditions are admissible to all Physically Challenged employees as per guidelines. Transport allowance at double the normal rate is given to Physically Challenged employees as per government guidelines.
- No physically disabled employee is posted in remote areas where hardship conditions are involved. Their postings/transfers are considered sympathetically.
- The cases/representations/grievances of disabled persons if any, are considered favorably.
- They are treated equally in line with other employees.
- A liberal view is taken while forwarding application of physically disabled candidates outside.
- Special facilities like separate lift for disabled, stair chair at reception is available for their comfort and convenience.

5.5.4 Training, Stress Busting And Rejuvenation Programmes

TCIL, believe in developing the individual, and thus empowering the team and the organization. This, in turn helps our clients worldwide to achieve better business results and profitability.

Keeping in view the fact that our business is characterized by hi-tech operations, we ensure that our employee is up-to-date with the latest technologies. As part of a continuous process, we conduct trainings for our employees in various fields such as technology, finance, management and health. Every employee, after undergoing external training, is expected to organize an internal training and submit training reports on the same topic. We also work on the development of varied skill sets of non-executives, helping them specialize in specific technical areas, including the latest computer technologies, managerial skills and optical fibre trainings for preparing them to

become successful executives in future. Finance officers and executives are trained on the latest procedures and policies of various financial areas. Training programmes were organized in new areas like Railway Signalling, EDPM and Leadership development Program.

TCIL also believe in the saying "Health is Wealth", and hence a number of health management trainings, like Stress Management, Yoga, Meditation, etc. are organized for all employees.

In the International market there is an increasing demand from the clients for deployment of human resources with a particular certification. Hence we motivate our young engineers and managers by sponsoring them for certification programmes like EDPM, PMP, CCNA etc.

Employees are also sponsored by the company to participate in workshops, seminars, conferences etc. Many in-house training programmes are organized on project management from third party for our middle level and higher management executives

TCIL, provide managers with practical guidelines for motivating, retaining, and coaching individual employees. Our training cell provides employees with a clear understanding of their own behaviour that enables them to become more effective team members and leaders. It even includes a mapping of their stress behaviour, and how those impact other team members and employees. Time to Time, TCIL organizes many stress busters and yoga classes to rejuvenate and motivate our employees.

Celebrated various weeks in TCIL. For Public Sector day weeklong celebrations (10th April 2019 to 16th April 2019) were being organized. Organized Hindi pakhwada for 15 days and Swachhta Pakhwada for 15 days. Also organized various health lectures and yoga sessions for TCILians. These programmes were organized aiming at providing relief from normal stress and job related tensions to the employees. For energizing and rejuvenating the employees from job stress and for change from day to day monotony, excursion tours were organized for employees on subsidized rates in 2019 for various outdoor activities.

5.5.5 Divestment Of TCIL Through IPO.

TCIL has received approval from the Govt for divestment through IPO in the first quarter of FY 2020. TCIL is among the six Central Public Sector Enterprises that the government of India proposes to list on the stock exchange through public issue.

A high level delegation visit from Sultanate of Oman in the month of December 2019 and signing of MOU between TCIL and Sultanate of Oman.

Annual General Meeting held on 20.11.2019 at TCIL HQ in the presence of Board of Directors, Directors and Chairman and Managing Director of TCIL.

5.6 BHARAT BROADBAND NETWORK LIMITED (BBNL)

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 to act as an executing agency for establishment, management and operation of the infrastructure created under then NOFN, now BharatNet Project.

BharatNet Project is being implemented to provide Broadband connectivity to all 2.5 lakh(approx.) Gram Panchayats(GPs). Under the project, network infrastructure is being established for

Broadband Highways, accessible to all service providers on a non discriminatory basis, to provide affordable broadband services to citizens and institutions in rural areas.

The work execution of connecting the GPs, being completed in a phased manner is as follows:

Phase- I: The target of completing 1,00,000 GPs under Phase- I of BharatNet has been achieved in Dec 2017 through 3 CPSUs namely BSNL, RailTel and PGCIL by using incremental OFC. Additional approx. 25,000 GPs are being executed as additional work front as per Phase- I methodology.

Phase- II: BharatNet Phase- II is under implementation to connect the remaining approx. 1,25,000 GPs by an optimal mix media like underground OFC, Aerial OFC, Radio and Satellite.

Implementation of Phase- II of the project is through following models:

- **State-led Model:** About 65,590 GPs in 8 States namely Andhra Pradesh, Telangana, Chhattisgarh, Tamil Nadu, Jharkhand, Gujarat, Odisha and Maharashtra are being implemented through State-led model.
- **Private Sector-led Model:** About 7494 GPs in 2 States namely Punjab and Bihar are being implemented through private sector model directly by BBNL.
- **CPSU-led Model:** About 25157 GPs in MP, Uttar Pradesh and Sikkim are being implemented through BSNL.
- **Through 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 4821 GPs.
- **PPP Model:** The remaining GPs are being implemented under this model which has been approved by the Digital Communications Commission and are being taken to the Union Cabinet for information.

Phase- III:

BharatNet Phase III would be in the nature of upgradation of network to meet the future requirements which will be worked out at later stage.

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 Rs. 1000,00,00,000.00. The issued, subscribed and fully paid share capital is 6,00,00,003 equity shares of Rs. 10/- each. Out of total issued subscribed and fully paid share capital, the Government of India holds 6,00,00,000 equity share of Rs. 10/- each valued Rs. 6,00,00,000.00. Apart from that Bharat Sanchar Nigam Limited, a Govt. of India Enterprise under the control of Department of Telecommunications hold one equity of Rs. 10/-. Further, Power Grid Corporation of India Limited (PGCIL) and RailTel Corporation of India Limited (both Govt. of India Enterprise) hold one equity share each of Rs. 10/-.

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

Note: As per audited annual financial statements.

5.7 CENTRE FOR DEVELOPMENT OF TELEMATICS (C-DOT)

C-DOT is 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. The progress on major technologies under development, field deployment, etc. is briefly summarized in the section given below.

5.7.1 Physical Performance

- Central Equipment Identity Register (CEIR) - Launch of pilot project in Maharashtra for tracing of stolen mobiles.
- Proof-of-concept for Cyber Space Monitoring (CCSM) Framework for CERT-Telecom completed.
- CMC[6] DR[7] readiness in C-DOT Bengaluru. Most of the central LEA[8] s and some of the state police on-boarded in CMS network.
- 5G[9] and LTE – Development for 5G ongoing for cloud RAN, NB-IoT (Narrow Band-IoT) and Massive MIMO[10] . MoU also signed with academic institutions for research and development in 5G. Trial of LTE in MTNL network.
- Optical technology –100G DWDM[11] system in ring network installed and commissioned in MTNL Delhi network. XGS-PON[12] (chassis based) offered to TEC and next generation-PON-2

[6] *Central Monitoring Centre*
[7] *Disaster Recovery*
[8] *Law Enforcement Agency*
[9] *Long Term Evolution (of universal terrestrial radio access network)*
[10] *Multiple Input Multiple Output*
[11] *Dense Wavelength Division Multiplexing*
[12] *Gbps Symmetrical Passive Optical Network (TDM/TDMA-based)*

offered for validation. TOT completed for new variants of GPON technology e.g. ONT[13] -17A, ONT-24 and 8 port line card, etc.

- M2M and STB[14] – M2M network extended lab trial with applications ongoing. Readiness of commercial CAS[15] STB for trial in the field.
- Green power supply – System integration for 5KW completed, testing in-progress.
- NGN technology – C-DOT MAX technology migration to NGN completed more than 95% of the total equipped capacity (~10 million fixed lines)
- Wi-Fi technology – C-DOT has installed C-Sat-Fi[16] solution for the Aspiration Village scenario using the VSAT[17] link at Harish Tal and TalliSethi village of Bhimtal Block of Nainital district for POC/trial.
- C-DOT Samvad (Messaging System) – Under deployment in Intelligence Bureau (IB). PoC successfully completed with Indian Navy, proposal submitted for commercial deployment. PoC ongoing with NTRO and Indian army
- Proof-of-concept (PoC) of Wayfinder for phase-1 successfully completed at C-DOT Delhi Campus with 2-D navigation & A-R (Augmented-Reality).

5.7.2 Security related projects

- **Centralized Monitoring System (CMS)** for lawful interception and monitoring - a National Roll-out Project put into operations. CMC DR IT Infrastructure in-progress – Acceptance Testing commenced. Link upgradation at Delhi and Bangalore locations, pending with DOT. LEMF[18] active-standby feature testing completed. Most of the central LEA[19] s and some of the state police on-boarded in CMS network. Implementation of Grey market analysis completed for all 21 RMCs[20]. Acceptance testing completed at MP, Karnataka, Mumbai, Delhi, UP (West) and Rajasthan
- **Secure and Dedicated Communication Network (SDCN)** - SDCN commissioned in MTNL Delhi Network. SDCN expansion for defence is completed with completion of FAT[21] for VoIP[22] CPE[23] , aggregators and router, field Support is ongoing. The proposal for extending SDCN to various locations outside Delhi NCR has also been submitted.
- **Internet Lawful Interception Monitoring System (ISP)** – During the year, implementation of ISP gateway completed at Verizona, Hyderabad and BSNL, Ernakulum; PCI handover completed for 8 sites in Delhi – TCl, Telstra, BSNL, MTNL, BSNL Noida, Airtel Noida, Reliance Okhla and Tikona.

[13] *Optical network termination*
[14] *Set Top Box*
[15] *Conditional Access System*
[16] *C-DOT Satellite WiFi*
[17] *very small aperture terminal*
[18] *Law Enforcement Monitoring Facility*
[19] *Law Enforcement Agency*
[20] *Regional Monitoring Centre*
[21] *Field Acceptance Testing*
[22] *Voice Over internet Protocol*
[23] *Customer Premises Equipment*

- **Centre of Excellence for Lawful Interception (CoE)** - Development of advance technology to fulfil requirements of LEAs. Significant progress has been made in OSINT capable for online and offline data collection, big data storage, analysis for social networking websites (You Tube, Twitter, Facebook, LinkedIn etc.). Object and Face Recognition - enhanced and pilot tried with features – gender, age estimation, emotions, etc. at C-DOT Delhi campus, and commercial proposal submitted to NCRTC. PoC of Wayfinder for phase-1 successfully completed at C-DOT Delhi campus with 2-D navigation & A-R (Augmented-Reality). Quantum-safe cryptography – FPGA-based PQC[24] encryptor offered for validation. Network steganography demonstrated in VoIP Phone to various potential users.

5.7.3 Optical technology related projects

- **DWDM-based 100G Optical Transport Network (OTN) system** – DWDM ring network installed and commissioned in MTNL, Delhi. DWDM linear network installation and commissioning between Mangalore and Madgaon in-progress.
- **Packet optical transport platform (POTP) 1.6T** – System integration completed and offered for internal validation.
- **TWDM-PON** - XGS-PON (chassis based) offered to TEC; XGS-PON (Mini OLT) and NGPON-2 offered for validation, hardware development completed for TWDM-PON integrated OLT Chassis.

5.7.4 Switching and routing technology

- **High speed routing system** – Software development and testing on the reference hardware has been completed. Proposal for trial submitted to MTNL. The trial is planned with 40 Gbps interface, progressively upgraded to 100 Gbps.
- **LAN[25] , MAN[26] enterprise and data centre segment** - Validation completed for medium capacity ToR[27] switch. Software porting on reference hardware in-progress for high capacity ToR and Spine switch.
- **Customized router for DRDO-ANURAG[28]** - The final testing of the system based on C-DOT designed processor ongoing. PCB[29] fabrication for the system based on indigenous multicore processor in-progress. Detailed design of the software for this system has been completed, implementation in-progress.
- **Router enhancements, trial and roll-out** - Trial and deployment of C-DOT MTBR is ongoing in BSNL & MTNL network.

[24] *Post Quantum Cryptography*
[25] *Local Area Network*
[26] *Metropolitan Area Network*
[27] *Top of Rack?*
[28] *Advanced Numerical Research and Analysis Group*
[29] *Printed Circuit Board*

5.7.5 Solar based Green Power Supply

- **High Capacity Solar Power Supply System** – 75W, 125W and 250W systems ready for manufacturing. ToT process also initiated for 2KW System. System integration for 5KW completed and testing in-progress.

5.7.6 Satellite based technology

- **Satellite hub baseband system** - Carrier-grade hub baseband system installed in DEAL, Dehradun. Integration and testing of the system with customer's module completed at DEAL, Dehradun. The integrated system shifted to field site (Army headquarter, Meerut). System installed and working in simplex mode. Field trial and system Integration testing with satellite ongoing.
- **Digital Video broadcasting (DVB) S2** Hub Baseband System – Requirement analysis, system architecture design and interfaces finalized. Customer concurrence awaited. Algorithm selection and simulation completed. Software algorithm development ongoing.

5.7.7 Telecom Services & Applications

- **M2M[30] communication** - One M2M applications – Smart Living, Smart Traffic Manager and Fire Alert System successfully integrated and demonstrated at C-DOT Delhi Campus. Design & development ongoing for CSE platform software. Development of Management Client (TR069) completed and development for Light Weight M2M (LWM2M) in-progress.
- **CiSTB[31]** – C-DOT commercial CAS integration testing completed. MoU signed with M/S BECIL[32] for commercialization. Site has been identified and allocated by DD/Prasar Bharati to start field trial. ToT process initiated for DTH[33] Hybrid (IP-enabled) STB. Internal validation completed for OTT[34] STB

5.7.8 Wireless Technologies

- **LTE[35] enhancements, customization and trial** – LTE system comprising of eNodeB and EPC[36] successfully demonstrated to MTNL at C-DOT Delhi Campus. Discussions with MTNL held for field trial. Site identified and preparation for field trial ongoing.
- **5G technology development** – Ongoing. 5G Baseband and radio unit architecture ready. NB-IoT prototype architecture using C-DOT LTE baseband unit finalized. Upgrading protocol

[30] *Machine to Machine*
[31] *C-DOT interoperable Set-Top Box*
[32] *Broadcast Engineering Consultants India Limited*
[33] *Direct-To-Home*
[34] *Over-the-Top*
[35] *Long Term Evolution*
[36] *Evolved Packet Core*

stack for NB-IoT. 5G interworking Lab setup ready in C-DOT Delhi. 4G Macro base station, GPON, DWDM, Sarvatra (Multi technology RAN solution – Lora, GSM, WiFi, LTE-Femto, using GPON-ONT as the backhaul), WiFi modules established.

5.7.9 Field Implementation of Major Projects

- **NGN**[37] – C-DOT MAX technology under migration to NGN. More than 95% of total equipped capacity (~10 million fixed lines) of MAX-NG has been migrated by BSNL with the help of C-DOT. Support is being provided to BSNL by setting up 2 support centers at Delhi and Bengaluru.
- **NMS**[38] - system in-operation in the field.
- **C-DOT Wi-Fi technology** – C-DOT has installed C-Sat-Fi solution using the VSAT link at Harish Tal and TalliSethi village of Bhimtal Block of Nainital district for POC/ trial. The complete setup has been made to demonstrate the various services at aspiration villages along with the powering of equipment using C-DOT Solar Power system.

The services offered at aspirational village are as follows:

  - Voice services (VoIP over Wi-Fi) using low cost android mobile handset to complete village.
  - Provision to connect POTS (at ATA port) for the voice service at GP location using C-DOT Service Switch.
  - PBX service at Gram Panchayat building using WiDHWAN[39] .
  - Affordable broadband services (Wi-Fi based services) for complete village by putting Wi-Fi in Mesh/ P2P configuration.
  - Retailing of broadband through PDO[40] (coupons/sachets).
  - Services like Chat and content (photo/files etc.) sharing, using SAMVAD.
  - Streaming of Local & relevant contents (region specific) using C-DOT Content Server and Manoranjan App.

- **GPON**[41] **variants** – TOT completed for new variants of GPON technology e.g.ONT-17A (to take care of the obsolescence of ONT-11), small ONT with WiFi (ONT-24) and 8-port GPON line card. Internal validation completed for modified SCM-1 (base-switch).

[37] *Next Generation Network*
[38] *Network Management System*
[39] *Wireless Data Connectivity at home using Wireline Access Network*
[40] *Public Data Office*
[41] *Gigabit Passive Optical Network*

5.7.10 DOT projects

1. **Cyber Security for CERT[42] -Telecom** - PoC for Cyber Space Monitoring (CCSM) Framework for CERT-Telecom, completed and a detailed project report submitted to DOT.
2. **Central Equipment Identity Register** - Stolen Device Reporting System web-portal has been inaugurated as pilot project for Maharashtra at Mumbai, on 13th September 2019 by Hon'ble MOC and also planned to be launched in Delhi on 30th December 2019. System validation completed for Phase-1 system and readiness for deployment with lab servers.

5.7.11 C-DOT Transfer Technology Program

One no. of technology transfer licensee added during the period. 4 nos. of ToTs were done during the period, cumulatively C-DOT ToT stands to 97, and thereby a manufacturing eco-system for production of indigenous technology has been established to realize Government's Make-in India and Digital programs.

5.7.12 Business Promotion & Awards

a) World Summit on the Information Society (WSIS) 2019

C-DOT officers attended the World Summit on the Information Society (WSIS) 2019 conference, hosted by ITU in Geneva from 8th to 12th April, 2019.

Officials from C-DOT attended several meetings held in the office of UN for the UN buildings Internal Navigation App. Indian Ambassador, Mr. Ramesh Chander, who is the main driving force behind this idea, insisted India's presence and contribution to be felt in the UN in the form of a strong software technology expertise – an app in everyone's mobile. The UN team was very much excited by the initiation of this project. It was decided that C-DOT should develop the required solution and conduct a pilot for the E-building.

[42]*Computer Emergency Response Team*

b) Technology Day 2019 by Titan

C-DOT participated in Technology Tune, an event organized by Titan in its Factory / Campus at Hosur, Tamil Nadu on 15th and 16th April 2019. C-DOT showcased its cutting edge products, especially, C-DOT miniPDO and Long Range Wi-Fi.

c) oneM2M Developers Event organized by C-DOT

C-DOT under the aegis of "India-EU ICT Standardization" organized the oneM2M developers' event for IoT startups/ companies during 25-26 April 2019 at Bengaluru.

d) ITU – DoT Training at C-DOT

Ms. Aruna Sundararajan, then Secretary, DoT chaired the Inauguration Ceremony of 4-day ITU-DoT Training Programme on "Human and Technical Capacity Challenges through Digital Skills" held at C-DoT Campus, New Delhi on 29th July 2019. She also mentioned that the South Asia office of ITU at the C-DOT Delhi campus will strengthen the engagement and will be a hub for collaborating and sharing innovations.

e) Strategic Electronics Summit (SES) 2019

C-DOT Participated in the 10th edition of Strategic Electronics Summit (SES 2018) – Defence & Aerospace, scheduled on 30th & 31st July, 2019 at Bengaluru, demonstrating its various technologies. The last nine editions of SES from 2010 to 2018 successfully brought Industry, Defence Establishment & Government together and this platform is growing year on year.

f) C-DOT's 36th Foundation Day

C-DOT celebrated its 36th Foundation Day on 26th and 27th August 2019. Hon'ble Minister of State (Telecom), Sh. Sanjay Shamrao Dhotre presided the function and launched C-DOT's innovative products – (i) C-Sat-Fi (C-DOT Satellite WiFi), (ii) XGSPON (10 G Symmetrical Passive Optical Network) and (iii) C-DOT's Interoperable Set Top Box (CiSTB). Various C-DOT products were exhibited and demonstrated during the occasion.

This year too, continuing the tradition, C-DOT held a technical conference as part of GB Meemamsi Lecture Series 2019, wherein several field experts, telecom veterans and academicians from around the world shared their experiences and discussed innovative ways to address the numerous issues and challenges faced by the technology developers, policy makers and end-users in the new era defined by the all-pervasive "Internet of Things (IoT)". The conference was jointly organized by C-DOT and European Telecommunications Standards Institute (ETSI) under the aegis of European Union (EU) funded project on "India-EU Cooperation on ICT - Related Standardization, Policy and Legislation" in association with Telecommunications Standards Development Society, India (TSDSI).

g) India Mobile Congress (IMC) 2019

C-DOT participated in India Mobile Congress 2019 organized in New Delhi from 14th to 16th October, 2019. C-DOT exhibiting its various products, like, XGSPON, DWDM, C-Sat-Fi, Early Warning System, Quantum Encryption, Router, NMS, CiSTB, Samvad, M2M Solution, 4G Solution, etc. during the three-day exhibition and gathered huge audience to witness the demonstration of our indigenous capabilities.

The event was inaugurated by the Hon'ble MoC, Sh. Ravi Shankar Prasad. IMC 2019 saw the participation of more than 50 countries, telecom giants, OEMs, system integrators, technology experts, industry analysts, government officials, young professionals, startups and students.

5.7.13 Awards

a) ELCINA Defennovation Award 2019 - Excellence in R&D (Large Category)

C-DOT received ELCINA Defennovation Award for Excellence in R&D (Large Categoy) for C-Sat-Fi in the 10th edition of Strategic Electronics Summit (SES 2019) – Defence & Aerospace, held on 30th & 31st July, 2019 at Bangalore. ELCINA Defennovation Awards aim to recognize outstanding companies who have made exemplary contribution in the field of Defence Electronics (R&D, Design and Manufacturing), demonstrating an innovative approach and excellence.

b) 44th ELCINA Award 2018-19 - 2nd Prize

C-DOT was awarded Second Prize for C-DOT Green (Hybrid) Power System – 2KW by ELCINA in its 44th ELCINA Award 2018-19. The Award distribution ceremony was held on 25th September 2019 at India Expo Centre & Mart, Knowledge Park in Greater Noida. Shri. Ajay Prakash Sawhney, Secretary and Shri. Sanjay Kumar Rakesh, Joint Secretary - MeitY, Govt of India, presided the function.

These Awards were instituted by ELCINA in 1976 and since last 43 years, the Association has been awarding the same to recognize the achievements of Electronics /IT Hardware manufacturing (ESDM) companies in India. These awards have stood the test of time and are highly regarded in industry circles.

c) Aegis Graham Bell Awards 2019 - Innovative Telecom Solution

10th Aegis Graham Bell Awards in association with India Mobile Congress felicitated C-DOT for C-Sat-Fi on 15th October 2019 at New Delhi. The award is a joint initiative of Aegis School of Business, Data Science, Cyber security and Telecommunication and India Mobile Congress to recognize the innovators and their innovations. IMC-Aegis Graham Bell Awards aim to promote innovators in the Information and Communication Technology (ICT) and to recognize their outstanding innovations with a vision to make India an innovative hub for rising brilliance and virtuosity.

Shri Anshu Prakash, Chairman DCC & Secretary (Telecom), Ministry of Communications, Government of India, was the Chief Guest for the award ceremony.

5.7.14 IPR Asset status

Table 5.23

Intellectual Property Asset	Number	Related Project / Product	Subject invention
Patent Granted	5	Wi-Fi	Dynamic Channel Selection In IEEE 802.11 Networks (India)
		Gyan Setu	Method And System Of Providing Data In A Preferred Language Of A User (India)
		Generic / Wireless	A Method And System To Access Multiple Wireless Network Operator's Subscription (India)
		SG-RAN	Resonance Mitigation In Rf High Power Amplifier Enclosure (USA)
		Interoperable Set-Top-Box	Interoperability Of Set Top Box Through Smart Card (India)
Patents Filed	3	GPON	A Method And A Mirrored Serial Interface (MSI) For Transferring Data (China, Nigeria, Canada, UK, USA, Vietnam)
		Wi-Fi	System And Method Of Enhancing Number Of Concurrent Voip Calls Over Low Bandwidth Satellite Link (India)
		Quantum Key Distribution	Device And Method Of Synchronization In Quantum Key Distribution (QKD) System (India)

Copyright filed	1	LTE-NMS	LTE-NMS software
Trademark Granted	3	Wi-Fi	Bamboo WiFi
		C-Sat-fi	C-Sat-fi
		Wi-Fi & Samvaad	C-TEC
Trademark filed	2	C-Sat-fi	C-Sat-fi
		Interoperable Set-Top-Box	CiSTB
Papers presented in the national and international conferences and seminars	3	Generic -Technical	"Interference-Aware Co-channel Transmission over DTV Bands via partial frequency and time overlaps", International Communications Conference-2019, Shanghai, China, 20-24 May 2019
		Generic -Technical	"Evaluation of functional splits in terms of optimal number of users served ", International Conference on Advanced Computing and Communications (ADCOM 2019), IIIT Bangalore, 5th to 7th September 2019
		Generic -Technical	3"Link performance evaluation of Uplink Precoded Multiuser MIMO-NOMA system for 5G Communication Networks", International Conference on Advanced Computing and Communications (ADCOM 2019), IIIT Bangalore, 5th to 7th September 2019

5.7.15 HR Initiatives in C-DOT

Women Empowerment

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. Total employees promoted to higher grades 26% of them were women, during the period.
- 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,

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 have 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 and 10 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 and persons with disabilities:

- 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.

Benefits for persons with disabilities:

- C-DOT follows guidelines issued by Government of India with respect to reservations in jobs for persons with disabilities.
- The physical handicapped employees are eligible for double the rates of transport allowance.
- The C-DOT Campus at Delhi has been constructed in such a manner so as to ensure barrier free environment for the persons with disabilities. The main entrance/exit can be approached through a ramp together with stepped entry. Even elevators connecting the various working areas have been installed in way to facilitate persons with disabilities to move around freely from one wing to another.

5.7.16 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.

- Total 33 nos. of technical trainings were organized for 287 C-DOTians during the period April to December 2019.
- As a part of new employees' induction, an Orientation Program at Delhi and Bangalore offices respectively, was organized for new batch of 44 Engineers, for 3 weeks.
- A three weeks Orientation program was also organized at Delhi office for internally promoted 27 nos. of Field Support Engineers.

5.7.17 Anticipated Achievements during January – March 2020

The achievements anticipated in the last quarter (Jan.-March 2020) of the financial year 2019-20, are as follows.

- Prototype readiness for Cloud RAN, Narrow-band IoT, Massive MIMO, mm wave point-to-point solution and lab demonstration. Establishment of basic lab infrastructure for 5G based systems.
- Development completion of 1.6 Tbps Packet Optical Transport Platform (POTP).
- Commencement of pilot/field trial for XGS-PON (chassis-based) and Mini-OLT. Prototype development of TWDM-PON integrated OLT chassis, internal validation for NGPON-2 chassis-based OLT and ONT.
- Development completion for high-speed router with 100G Ethernet interface. Pilot trial of MTBR with 100 Gbps transport interface.
- Pilot trial for medium-capacity ToR switch, 48 Port L2/L3 switch.
- Field trial and deployment of 2000W and 5000W Green power supply systems.
- M2M network pilot trial in the field with multiple applications.
- Field trial of carrier grade hub-baseband with satellite.
- Readiness of C-DOT Interoperable Set Top Box (CiSTB) variants, namely interoperable cable STB, DTH STB, OTT STB and CAS adaptations.
- Pilot trial of OSINT comprising suit of tools with capabilities for online and offline data collection, big data storage and analysis for social networking websites, namely, Twitter,

Facebook, LinkedIn. Pilot trial of face detection and recognition engine in controlled and uncontrolled environment

- Roll out of CEIR pan-India in offline mode.
- Prototype implementation of quantum-safe algorithm in PKI and quantum-safe security in Block chain, Readiness of system architecture design of FPGA-based PQC encryptor, readiness for network steganography customer trials.
- POC/trial of C-Sat-Fi solution at Tripura with BBNL as per the direction of USOF
- Wayfinder Field trial planned in February'2020.
- Technology support for CMS infrastructure installed in the field.

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 and Cable Services were also notified as Telecommunication service .

2. 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 is currently headed by Dr. R.S. Sharma, the former Secretary in the Department of Electronics & Information Technology, Government of India as Chairperson.

3. 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 2019. 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.

4. During the year, while discharging various recommendatory and regulatory functions, TRAI has tried to address various issues faced by the telecom sector. The Authority made various Recommendations to the Government on key issues concerning telecommunications sector, framed Regulations and issued Consultation Papers which are discussed briefly in the following paragraphs:

6.1.1 RECOMMENDATIONS

During the year 2019-20, the Authority made following Recommendations to the Government:

- **Recommendations dated 21st October 2019 on "Review of terms and conditions for registration of Other Service Providers (OSPs)"**

  DoT vide its letter dated 10th September 2018 sought recommendations of TRAI on review of terms and conditions for registration of Other Service Providers (OSPs). Further, background

information on certain issues was also provided by DoT vide letter dated 7th January 2019. TRAI on 29th March 2019 issued a detailed Consultation Paper on "Review of terms and conditions for registration of Other Service Providers (OSP)", in order to deliberate on various aspects related to the matter and to seek inputs from stakeholders on relevant issues. Subsequently, an Open House Discussion was held on 15th July 2019 in Delhi, to seek further views of the stakeholders on various issues.

Based on the comments/inputs received from the stakeholders and on its own analysis, TRAI finalized its Recommendations on "Review of terms and conditions for registration of Other Service Providers (OSPs)".

- **Recommendations dated 25th October 2019 on "Allotment of Spectrum to Indian Railways for Public Safety and Security services"**

  DoT through its letter dated 27th February 2019 informed that Indian Railways has proposed to install an Ultra-high-speed LTE based communication corridor along their network for Train-ground and Train-Train communication. Through the said letter, DoT requested TRAI to provide its Recommendations on administrative allotment of spectrum to Indian Railways and the quantum, price, appropriate frequency band (including 450-470 MHz band) and any other related issue.

  In this regard, a Consultation Paper (CP) on 'Allotment of spectrum to Indian Railways for Public Safety and Security services' was issued on 24th June 2019.

  Based on the comments/inputs received from the stakeholders and on its own analysis, TRAI has finalized its Recommendations on 'Allotment of spectrum to Indian Railways for Public Safety and Security services'.

- **TRAI's response dated 8th July 2019 to DoT's back reference dated 1st July 2019 on Recommendations on 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 dated 1st August 2018**

  DoT, through its letter dated 19th April 2017, informed that the Government is planning to auction the right to use of spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3400 MHz and 3400-3600 MHz bands in the next auction. Through the said letter, DoT also requested the Authority to provide its recommendations on applicable reserve price, quantum of spectrum to be auctioned and associated conditions for auction of spectrum in these bands for all service areas.

  After a detailed consultation process, the Authority submitted its recommendations on 1st August 2018 on "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".

  Some of the recommendations were referred back to the Authority by DoT for clarification/

reconsideration. After examining these issues, TRAI sent its response to the reference back in July 2019.

- **DoT's back-reference dated 24th December 2019 on Recommendations on "Licensing framework for Audio Conferencing/ Audiotex/ Voice Mail Services" dated 16th December 2016**

  DoT vide its letter dated 19th January 2016 had sought recommendations of TRAI for review of terms and conditions for issue of licenses for Audiotex/ Voice Mail/ Unified Messaging Services (UMS). In this regard, TRAI issued a Consultation Paper on "Review of Voice Mail/ Audiotex/ Unified Messaging Services Licence" on 14th June 2016. Based on the written comments received from stakeholders and views of stakeholders on OHD held on 30th September 2016, the Authority issued its recommendations on 'Licensing framework for Audio Conferencing/ Audiotex/ Voice Mail Services' vide its letter dated 16th December 2016.

  DoT on 10th October 2019 informed that the TRAI's recommendations on "Licensing framework for Audio Conferencing/ Audiotex/ Voice Mail Services" dated 16th December 2016 have been considered and accepted by Government except recommendation no. 4 which reiterates TRAI's earlier recommendations dated 6th January 2015 on 'Definition of Revenue Base (AGR) for the Reckoning of License Fee and Spectrum Usage Charges' which is a separate recommendations, hence is to be dealt separately. Therefore, DoT has solicited TRAI's recommendations on the points related to (i) Financial Bank Guarantee (ii) Penal Provision and (iii) TEC Specification in the existing Audiotex/ Voice Mail/ UMS license agreement/license.

  The Authority after deliberations, approved the proposed response to the reference back on TRAI's Recommendations on "Licensing framework for Audio Conferencing/ Audiotex/ Voice Mail Services".

6.1.2 REGULATIONS

- **Notification on implementation of Telecommunication Mobile Number Portability (Seventh Amendment) Regulations, 2018 dated 12th June 2019**

  TRAI had issued Telecommunication Mobile Number Portability (Seventh Amendment) Regulations, 2018 on 13th December 2018. As per these regulations, the revised Mobile Number Portability (MNP) process was scheduled to be in force w.e.f. 13th June 2019.

  After considering the requests of stakeholders by the Authority, the timeline for implementation of Telecommunication Mobile Number Portability (Seventh Amendment) Regulations, 2018, was extended from 13th June 2019 to 30th September 2019 by a notification dated 12th June 2019.

- **Telecommunication Mobile Number Portability (Eighth Amendment) Regulations, 2019 dated 30th September 2019**

  TRAI issued Telecommunication Mobile Number Portability (Eighth Amendment) Regulations, 2019 on 30th September 2019 and is scheduled to be in force w.e.f. 11th November 2019. Through this amendment, besides other minor changes, the provision of Telecommunication Mobile Number Portability Regulations, 2009 has been aligned with the Telecommunication Mobile Number Portability Per Port Transaction Charge and Dipping Charge (Second amendment) Regulations, 2019.

- **The Standards of Quality of Service of Basic Telephone Service (Wireline) and Cellular Mobile Telephone Service (Seventh Amendment) Regulations, 2019 dated 1st November 2019**

  TRAI notified the standards of quality of service of basic telephone service (wireline) and cellular mobile telephone service (Seventh amendment) regulations, 2019 that is proposed to specify the duration of call alert for called party in telecommunication networks. With the enactment of these amendments, Access Provider would have to maintain the time duration of alert for an incoming voice call, which is neither answered nor rejected by the called party, to thirty seconds for Cellular Mobile Telephone Service and sixty seconds for Basic Telephone Service.

- **The Telecommunication Interconnection Usage Charges (Fifteenth Amendment) Regulations, 2019 dated 17th December 2019**

  TRAI on 17th December 2019 issued "The Telecommunication Interconnection Usage Charges (Fifteenth Amendment) Regulations, 2019" which prescribes revision in the date of applicability of Bill and Keep (BAK) regime in respect of wireless to wireless domestic call termination charges. Domestic termination charges are the wholesale charges payable by a Telecom Service Provider (TSP)whose subscriber originates the call to the TSP in whose network the call terminates.

  Key features of the Regulations are as follows:

  a) For wireless to wireless domestic calls, termination charge would continue to remain as Rs.0.06 (paise six only) per minute up to 31st December 2020.

  b) From 1st January 2021 onwards the termination charge for wireless to wireless domestic calls shall be zero.

6.1.3 CONSULTATION PAPERS

- **Consultation Paper dated 30th May 2019 on "Review of the Regulatory Framework for Interconnection"**

TRAI issued "The Telecommunication Interconnection Regulation, 2018" dated 1st January 2018 on interconnection agreement, bank guarantee, provisioning & augmentation of port oat POIs, interconnection charges, disconnection of POIs and financial disincentive on interconnection matters. However, on the issue of review of the Level of Interconnection the Authority observed that there is a need for further deliberations. Accordingly, the Consultation Paper on "Review of the Regulatory Framework for Interconnection" was issued on 30th May 2019 and comments and counter comments were sought from the stakeholders.

The said Consultation paper is proposed to address the issue of fixed to fixed Point of Interconnection. The Authority would take a decision on the subject matter after considering the views of the stakeholders.

- **Consultation Paper dated 16th August 2019 on "Review of Scope of Infrastructure Providers Category-I (IP-I) Registration"**

  TRAI issued Consultation Paper on "Review of Scope of Infrastructure Providers Category-I (IP-I) Registration" on 16th August 2019. This consultation process was suo-motu initiated by the Authority to make recommendations to the Government for the encouragement and facilitation of sharing of passive as well as active infrastructure as envisaged in the National Digital Communications Policy-2018 (NDCP-2018).

- **Consultation Paper dated 16th September 2019 on "Duration of alert for the called party"**

  TRAI on 16th September 2019 released a Consultation Paper on 'Duration of alert for the called party'. In telecommunication networks, ring tone is used to alert the called party about the incoming call. The objective of this consultation Paper is to discover values for duration of ringing which should be configured by all the telecommunication service providers to forced release calls in case no answer condition persists beyond the given duration. It further seeks inputs on appropriate measures to be taken in this regard. The paper also explores the possibility of customization of ringing duration by the customer. Comments on the issues raised in the consultation paper were invited from the stakeholders by September 30, 2019 and counter comments, if any, by October 07, 2019. After considering the comments received and the issues discussed during the Open House Discussion held on 17th October 2019, the Regulations were notified.

- **Consultation Paper dated 18th September 2019 on "Review of Interconnection Usage Charges"**

  TRAI on 18th September 2019 issued the Consultation Paper on "Review of Interconnection Usage Charges". Interconnection between two public telecommunication networks allows consumers of one service provider to communicate with consumers of the other service provider. The principle regulation for Interconnection Usage Charges (IUC) of voice calls was notified by the Authority in the year 2003. In respect of domestic calls termination charge,

the last amendment to the IUC Regulation was carried out in the year 2017. The Regulation of 2017 brought down wireless to wireless domestic call termination charge to Rs. 0.06 per minute, effective from 1/10/2017 to 31/12/2019. It further prescribed Bill and Keep (BAK) regime i.e. zero termination charge, effective from 1st January 2020 for domestic wireless to wireless call termination. On the basis of comments received from stakeholders in writing and during the open house discussion, and its own analysis, the Authority has prescribed the revised date of applicability of Bill and Keep (BAK) regime

- **Consultation Paper dated 19th September 2019 on Reforming the Guidelines for Transfer/ Merger of Telecom Licenses**

  DoT through its letter dated 8th May 2019, inter-alia, informed that the National Digital Communications Policy (NDCP), 2018 envisages simplifying and facilitating Compliance Obligations as one of the strategies and reforming the Guidelines for Mergers & Acquisitions, 2014 to enable simplification and fast tracking of approvals as one of the action plan for fulfilling the strategy. Through the said letter, DoT has sought the recommendations of TRAI on 'Reforming the Guidelines for Mergers & acquisitions, 2014'.

  Accordingly, a consultation paper on "Reforming the Guidelines for Transfer/Merger of Telecom Licenses" was released on 19th September 2019 providing the background information and seeking inputs of the stakeholders on reforms required to be made in the existing guidelines on Transfer/Merger of Licenses to enable simplification and fast tracking of approvals.

- **Consultation Paper dated 20th September 2019 on "Developing a unified numbering plan for fixed line and mobile services"**

  TRAI received a reference dated 8th May 2019 from DoT seeking recommendations on 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."

  The Consultation Paper on "Developing a unified numbering plan for fixed line and mobile services" was issued on 20th September 2019 seeking written comments and counter-comments from the stakeholders by 21st October 2019 and 4th November 2019 respectively, which was extended on the request of stakeholders upto 13th November 2019 and 27th November 2019 respectively.

  The purpose of this Consultation Paper is to analyse the changes that affect the National Numbering Plan and to identify the ways in which numbering resource management and allocation policy might be managed for ensuring adequate numbering resources. The issues covered are the long-term suitability of numbering plan, unified numbering plan, efficient utilization of the numbers and an efficient allocation criterion.

- **Draft Telecommunication Consumer Education and Protection Fund (Fifth Amendment) Regulations, 2019 dated 18th October 2019**

  TRAI on 18th October 2019 released draft Telecommunication Consumers Education and Protection Fund (Fifth Amendment) Regulation, 2019 for stakeholder' comments.

  TRAI had notified the Telecommunication Consumers Education and Protection Fund Regulations, 2007 on 15th June 2007 which provides basic framework for depositing unclaimed money of consumers by Telecom Service Providers and maintenance of the Telecommunication Consumers Education and Protection Fund. In terms of Regulation 3 of TCEPF Regulations, 2007, excess amount collected by service providers from the subscribers over the rates of telecommunication services notified by the Authority or notified by the service providers under forbearance - which they are not able to refund to the subscribers and is lying unclaimed with them - is to be transferred to the fund within the timelines stipulated. In accordance with this, telecom service providers have been depositing such amounts to the fund.

- **Consultation Paper dated 23rd October 2019 on "Cloud Services"**

  TRAI on 23rd October 2019 released a Consultation Paper on 'Cloud Services' seeking comments of all stakeholders. Earlier, TRAI issued recommendations on 'Cloud Services' on the 16th August, 2017, covering legal and regulatory framework for Cloud Services, overarching and comprehensive legal framework for data protection, interoperability and portability, legal framework for Cloud Service Providers (CSPs) operating in multiple jurisdictions, cost-benefits analysis etc. Further, DoT vide letter dated 27th September 2018, conveyed that Government of India has considered the recommendations of TRAI and sought additional recommendations from TRAI on terms and condition of registration of Industry body, eligibility, entry fee, period of registration, and governance structure etc.

- **Consultation Paper dated 27th November 2019 on "Transparency in Publishing of Tariff Offers"**

  TRAI on 27th November 2019 released a Consultation Paper on "Transparency in Publishing of Tariff Offers". This Consultation Paper has been issued with the objective of empowering consumers by making available all relevant information to them and to eliminate the instances of adverse choices made by consumers. The scope of the present consultation paper is limited to review of transparency requirements in communication of tariff offers by the service providers to the subscribers.

- **Pre-Consultation Paper dated 9th December 2019 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 catalyze 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 afore-mentioned strategy. Through the said letter, DoT has, inter-alia, requested TRAI to furnish recommendations on enabling unbundling of different layers through differential licensing, under the Telecom Regulatory Authority of India Act, 1997, as amended. In this regard, a Pre-Consultation Paper on "Enabling Unbundling of Different Layers Through Differential Licensing" was released on 9th December 2019 seeking inputs from the stakeholders.

- **Consultation Paper dated 17th December 2019 on "Tariff Issues of Telecom Services"**

  TRAI on 17th December 2019 released a Consultation Paper on "Tariff Issues of Telecom Services". TRAI has been mandated by the TRAI Act, 1997 to regulate the tariffs offered by the Telecom Service Provider for its various services. Ensuring the provision of ever-increasing data consumption and a good Quality of Service requires a lot of investment in maintaining and improving telecom infrastructure. Fast pace of technological changes in the sector require huge capital investments. Telecom sector is the infrastructure provider for many other sectors of the economy. Thus, it is necessary to ensure that the telecom sector remains healthy and has orderly growth. These are crucial issues currently impacting the telecom sector and a detailed deliberation by all the stakeholders is necessary to find the best way forward. Accordingly, the Authority has decided to float a consultation paper on the issue so that all the stakeholders in the value chain can get an opportunity to fully participate in the deliberations and give their views on such crucial issues affecting consumer interest. Considering this aspect, a consultation paper on "Tariff Issues of Telecom Services" has been issued to invite comments from all the stakeholders, on various issues relating to tariff in telecom sector.

6.2 TELECOM DISPUTES SETTLEMENT & APPELLATE TRIBUNAL

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/ Appeals/ Execution Applications/Review Applications), which increased to 948(excluding Miscellaneous Applications) in 2018 and in the year 2019 (till December 2019), a total of numbers of 635 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 31st December, 2019 is enclosed.

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 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 30.11.2019 a total number of 503 cases have been referred to Mediation Centre. Out of this, a total number of 186 cases have been settled and 302 numbers of cases were referred back to the Tribunal unsettled. The remaining 16 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.

STATEMENT OF YEAR WISE INSTITUTION OF CASES AS ON 31ST DECEMBER, 2019

S. No.	Discription	INSTITUTION																				
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total	
1	Petition	24	20	20	56	155	328	333	271	284	437	523	981	478	545	707	829	717	892	561	**8161**	
2	Review Application	0	1	2	2	3	7	17	5	9	11	14	19	9	11	2	9	22	3	12	**158**	
3	Appeal	12	15	32	5	12	18	15	11	9	11	2	22	19	7	5	3	9	9	3	**219**	
4	AERA Appeal	0	0	0	0	0	0	0	0	0	5	14	12	15	3	0	9	2	8	4	**72**	
5	CYBER Appeal	0	0	0	0	0	0	1	0	8	6	11	4	10	8	34	3	1	23	34	**143**	
6	Received on Transfer from Trai	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**16**	
7	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	**13**	
8	On Remand from SC	5	1	1	0	2	3	10	6	7	1	0	0	0	0	0	0	0	0	0	**36**	
9	Executition Applicaton	0	0	0	7	2	18	27	4	10	36	24	46	15	27	13	30	15	13	21	**308**	
11	M.A.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	7	**6**	**28**	**16**	**62**	
	Grand Total	**57**	**37**	**55**	**70**	**174**	**374**	**403**	**297**	**327**	**507**	**588**	**1084**	**559**	**602**	**765**	**890**	**772**	**976**	**651**	**9188**	

S. No.	Discription	Disposal																				Pendency
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total	
1	Petition	24	20	20	56	155	328	333	271	284	437	523	960	434	425	461	300	305	418	125	**5879**	2282
2	Review Application	0	1	2	2	3	7	17	5	9	11	14	19	9	11	2	9	22	3	11	**157**	1
3	Appeal	12	15	32	5	12	18	15	11	9	11	2	22	19	7	5	1	9	8	2	**215**	4
4	AERA Appeal	0	0	0	0	0	0	0	0	0	5	14	11	11	1	0	2	0	3	0	**47**	25
5	CYBER Appeal	0	0	0	0	0	0	1	0	8	6	11	3	7	3	6	1	1	6	6	**59**	84
6	Received on Transfer from Trai	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**16**	0
7	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	**13**	0
8	On Remand from SC	5	1	1	0	2	3	10	6	7	1	0	0	0	0	0	0	0	0	0	**36**	0
9	Executition Applicaton	0	0	0	7	2	18	27	4	10	36	24	46	15	23	12	29	5	11	2	**271**	37
11	M.A.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	5	5	27	11	**50**	12
	Grand Total	**57**	**37**	**55**	**70**	**174**	**374**	**403**	**297**	**327**	**507**	**588**	**1061**	**508**	**470**	**488**	**347**	**347**	**476**	**157**	**6743**	**2445**

CHAPTER 7
ADMINISTRATION, TRAINING AND SWACHH BHARAT

7.1 RIGHT INFORMATION ACT

(i) 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 headed by Section Officer and functioning under the supervision of Deputy Secretary and Nodal Officer (RTI). To facilitate the quick disposal of RTI applications/appeals, 101 officers have been designated as CPIOs and 32 officers have been designated as First Appellate Authorities in the Department.

RTI Applications data for 2019-20 as on 10.01.2019 are as under:

1. Total online RTI applications received during the year – 2436.
2. Total online applications received from other Departments – 966
3. Total online RTI appeals received during the year – 202
4. Total offline RTI applications received during the year – 15
5. Total fee received for offline application during the year – Rs. 1010

The facility of receiving and processing RTI applications/appeals online through the RTI Web-Portal of Department of Personnel & Training has been started in the Department on 23.08.2013. This is strengthening the system of quick disposal and monitoring of RTI applications and appeals. All PSUs expect BBNL under the Department have been registered as Public Authority on RTI-MIS portal.

7.2 PUBLIC GRIEVANCE

A. Grievance Redressal Mechanism

The responsibility of redressal of grievances in the telecom sector lies with the concerned organizations / subordinate units / PSUs / administrative sections of the Ministry / Service providers (in case of a service grievance). However, Public Grievance (PG) Wing of Department of Telecommunications (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. 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. PG wing is coordinating the matters with all the concerned stake holders including Telephone Service Providers (TSPs), Internet Service Providers (ISPs) etc. for amicably resolving the grievances effectively & in time bound manner to the satisfaction of the complainants.

Grievance can be lodged in PG Wing of DoT through following means:

(a) By Post: Public Grievances Cell, Department of Telecommunications, Room No.612, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi – 110002.

(b) By hand: Information & Facilitation Counter, Sanchar Bhawan, 20, Ashoka Road, New Delhi- 110001.

(c) Through Fax: FAX No. 011-23232244

(d) Through Phone: Phone No. 011-23221166, 1063 (Toll Free)

(e) By Web Portal: www.pgportal.gov.in

The Grievance / Complaint resolution process through CPGRAMS is as follows:

i) With an object of speedy redressal/ and effective monitoring of grievances, DoT is using Web based and Centralized Public Grievances Redressal And Monitoring System (CPGRAMS) of Government of India developed by Department of Administrative Reforms & Public Grievance (DARPG) through which a customer can register their grievances for redressal.

ii) The system facilitates generation of unique registration number upon the online submission of grievances from aggrieved citizens (to DoT) through internet using any Browser interface.

iii) The system also provides the online facility to a citizen to monitor the progress of redressal process in respect of the grievance lodged by him.

iv) This version of CPGRAMS has been reformed and now the citizens are empowered to select a service category through drop down lists to pinpoint a service for which grievance is lodged. By doing so, the lodged grievance would be directly addressed and forwarded by the system to the concerned redressal office for its resolution. In case citizens are not sure of a service category then, they can select “Others / Miscellaneous”.

In this bottom-up approach, the complainant has been facilitated to navigate his complaint in real time to the line-end office. In this version different offices are mapped to different categories of complaints, through drop-down menus so that the complaint flows seamlessly to the office providing resolution. In this manner, the complainant will get resolution of his complaint in minimum of days. In turn, the department will save on manpower and can work on improving the quality of responses.

HEAD OF DEPARTMENT	CONTACT POINTS
Secretary (Telecom) Department of Telecommunications 210, Sanchar Bhawan New Delhi- 110001. Tel: 011-23719898, FAX No. 23711514 E-mail ID: Secy-dot@nic.in	Shri Arvind Chawla Senior Deputy Director General (Public Grievances) Department of Telecommunications 612, Mahanagar Doorsanchar Bhawan, Jawahar Lal Nehru Marg, Old Minto Road, New Delhi–110002. Tel: No. 011-23221231, FAX No. 23222605 E-mail ID: ddgpg-dot@nic.in Our website – www.dot.gov.in

B. Details of Officers in PG Wing.

Designation of PG Officer	Name	Telephone Number	FAX. No.	Postal address
Deputy Director General (PG)	**Shri Arvind Chawla**	011-23221231	011-23222605	Room No. 612, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002
Director (PG - I)	**Shri Jitendra Garg**	011-23220537	011- 23222350	Room No. 605, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002
Director (PG - II)	**Shri Arun Kumar**	011-23222723	011-23212724	Room No. 606, Cabin No. 11, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002
Director (MOC - PG)	**Shri Yogesh Kumar**	011-23222711	011- 23232244	Room No. 602, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002
ADG (PG - I)	**Shri Surendra Kumar Khurana**	011-23222582	011-23222224	Room No. 606, Cabin No. 15, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002
Section Officer (MOC - PG)	**Shri Hariom Gaur**	011-23210678	011-23232244	Room No. 606, Cabin No. 16, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002

Under Secretary (Legal & PG - II)	**Shri Balbir Singh**	011-23232657	011-23232244	Room No. 604, Cabin No. 02, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002
Section Officer (Legal)	**Shri Rajen Kabui**	011-23212088	011-23212724	Cabin No. 23, 6th Floor, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002
Incharge (MOC - P G Cell)	**Shri Prince Tomar**	011-23212088	011-23212724	Cabin No. 23, 6th Floor, Mahanagar Doorsanchar Bhawan, Old Minto Road, J. L. Nehru Marg, New Delhi 110002

C. Grievances Redressal Status

Department of Telecom receives complaints through the offices of Hon'ble Prime Minister, Minister of Communications, MPs, MLAs, VIPs, Chairman's Office, Department of Administrative Reforms and Pubic Grievances (DARPG), Department of Pensions and Pensioners Welfare, Directorate of Public Grievances (DPG), and other Govt. Departments and also directly from citizens in its Public Grievance Wing. Public Grievance Wing of DoT monitors complaints for their early and timely settlements. The details in respect of complaints handled for the year 2019-20 (from 01.04.2019 to 31.12.2019) are given as under: -

Table 7.2

Opening Balance as on April 01, 2019	No. of grievances booked during 1st April, 2019 to 31st December, 2019	Total	No. of grievances disposed during 1st April, 2019 to 31st December, 2019	Pending Balance as on 31st December, 2019
3209	45685	48894	46304	2590

7.3 CITIZEN CHARTER

The Citizen / Client's Charter is a written declaration by a Government Department that highlights the standards of service delivery that it subscribes to ensure availability of choice for consumers, avenues for grievance redressal and other related information. In other words, it is a set of commitments made by a department regarding the standards of service which it delivers.

Though not enforceable in a court of law, the Citizen's/Client's Charter is intended to empower citizens and clients 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's / Clients Charter is to render citizen-centric public services by making them demand driven rather than supply driven.

DoT has formulated its Citizen's / Client's Charter listing main services being delivered by DoT. All these services have been documented with associated process details which include details of documents required, applicable fees, if any, along with its mode of payment for availing each of the services. The Charter specifies the standards of services delivery, the contact details of the centre's responsible for delivery of these services, performance evaluation criteria in respect of delivered services, 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 2019-20. In all, 27 officers of the cadre were deputed to 6 long term Training programs at IIM Bangalore, IIPA New Delhi, MDI Gurgaon, TERI New Delhi, ISB Hyderabad and NDC New Delhi. In addition to above, about 30 officers were deputed for short term trainings during the year in the upcoming technology areas of Mobile Brodband, QoS, IoT, 5G, e-Governance, Public Procurement, Cyber Security etc.

Mid Career Training Program(MCTP) for ITS officers was started from July 2019. 6 programs have been successfully conducted for Technical component of MCTP and 290 ITS officers have been trained till December 2019.

Under the Synergy initiative, DoT takes steps for capacity building of officers/officials in the PSUs and organisations under it by conducting inter-organisational trainings. Keeping in view the above objective, a training program was conducted by Training Division in coordination with TEC at Bangalore from 1st-2nd July 2019 for capacity building of officers of ITI Ltd on the topic 'IoT & 5G'. About 75 officers/officials of Naini, Rae Bareli, Mankapur, Northern Marketing/ROs units of ITI were trained in the program.

With a view to provide exposure to latest technologies to senior officers, two one day seminars were conducted in collaboration with MoU partners/Industry at DoT Headquarter during the year 2018-19 on technical topics of '5G- The Path to the Next Generation' and 'Competition Policy in the Digital Age'. About 85 officers of the department attended these programs.

Skill Development Activities by DoT in 2019-20

Pilot Scheme '**Pandit Deendayal Upadhayaya Sanchar Kaushal Vikas Pratisthans**'

A Pilot Scheme to open 10 'Pandit Deendayal Upadhayay Sanchar Kaushal Vikas Pratisthans' for skill development training in Telecom Sector especially in rural and backward areas, was approved by Secretary(T) and was launched by Hon'ble MOS(IC) MOC on 24th May 2017.

The objective is to give high quality skill development trainings to the students and citizens at large particularly in the rural area as and to help in creating skilled manpower for the Telecom sector.

The work regarding opening and running of 10 centres (as listed below) named as 'Pandit Deendayal Upadhayaya Sanchar Kaushal Vikas Pratisthans' and training 10,000 candidates was awarded to BSNL with approval of Secretary(T), 1. Ghazipur (UP) 2. Varanasi(UP) 3. Jabalpur(MP) 4. Mysore(KTK) 5. Ranchi(JKD) 6. Bhuvaneshwar(ORS) 7. Nagpur(MH) 8. Rajpura(PJB) 9. Pune(MH)10. Kalyani(WB).

The training are conducted as per National Skill Qualification Framework(NSQF) on Qualification Packs (QPs) already approved by Ministry of Skill Development & Entrepreneurship(MSDE). The details of trainings conducted are: (a) Optical Fibre Splicer (b) Optical Fibre Technician (c) Broadband Technician (d) Tower Technician.

The training courses are approx. 250-300 hours' duration. At the end of the training, each trainee is assessed by Telecom Sector Skill Council (TSSC), an assessment agency approved for the Ministry of Skill Development & Entrepreneurship (MSDE). The scheme was inaugurated by Hon'ble MOSC on 4.11.2018 at Ghazipur.

100 % financial support is being provided by DoT through budgetary resources and would be limited to maximum of Rs. 11.386 crore for 10,000 candidates. These skill development training are absolutely free of cost, from the trainee's perspective. Under the pilot phase 10,000 candidates have been trained in all 10 centres and assessed.

Other Skill development trainings;

Apart from above scheme, DoT is also imparting skill development trainings through telecom PSUs-BSNL MTNL, ITI, and TCIL. In year 2019-20 (Upto December), 34,694 candidates were skill trained in various telecom subjects: The candidates expected to be trained during Jan-March,2020 is 9418.

Year	BSNL	MTNL	ITI	TCIL	Total
2019-20	31,419	1,341	1,679	255	34,694

Pandit Deendayal Upadhyaya Telecom Skill Excellence Award.

The new scheme of '**Pandit Deendayal Upadhyaya Telecom Skill Excellence Award**' was launched by DoT to give recognition to the skilled persons in the Telecom domain 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. Nominations were invited for 8 awards for year 2018(One 1st prize of Rs. 50,000, two 2nd prizes of Rs. 30,000 each and five 3rd prizes of Rs. 20,000 each) 22nd nominations have been received and after their scrutiny/evaluation, 2 nominations are under final consideration.

A. 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.

(i) Summary of Training activities in Year 2019-20:

NTIPRIT has conducted Induction training programs for ITS, BWS & JTO probationers, Mid-Career Training programs for ITS officers, 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 ITEC programs of Ministry of External affairs in the year 2019-20.

- Officer Trainees of ITS 2014, 2015, 2016 and P&T BWS 2015, 2016 & 2017 batches completed their 15 weeks Foundation Course and the probationary trainings of ITS 2014, 2015, 2016, P&T BWS 2015, 2016 and JTO 2016(RL) batch were completed in F.Y. 2019-20.
- Two new batches (ITS-2018 and JTO-2018) joined NTIPRIT for induction training in September, 2019.
- Mid career Training Program(MCTP) for ITS Officers has been commenced this year and 160 ITS Group 'A' officers have been trained in 6 batches for the Technical component of MCTP courses by NTIPRIT till December 2019.

- Promotion linked mandatory training for all the eligible Group B officers has been conducted.
- 7 Seminars/ In-Service courses till December, 2019 have been conducted and 139 officers attended these courses.
- 6 International courses for foreign participants under the Indian Technical and Economic Cooperation (ITEC) program of Ministry of External Affairs have been scheduled in F.Y. 2019-20. 3 courses have already been conducted till December, 2019 attended by 53 participants from 28 different countries.

(ii) Induction Trainings

ITS and P&T BWS Induction Trainings

Joining of ITS-2018 batch and Interaction of Officer Trainees with Hon'ble MoC and Hon'ble MoSC

A new batch of 15 Officer Trainees of ITS 2018 batch joined NTIPRIT on 16.09.2019. These Officer Trainees were administered Oath of Allegiance by Hon'ble Minister of Communications, Sh. Ravi Shankar Prasad in the first week of their joining, at Electronics Niketan New Delhi on 20.10.2019. The officer trainees also interacted with Hon'ble Minister of State for Communications, Shri Sanjay Dhotre. Sh. Anshu Prakash, Chairman Digital Communication Commission& Secretary(T); Sh. Subodh Kumar Gupta, DG Telecom;Ms.Mousumy Bedekar, DDG (Training), DoT HQ, Ms. V. Sobhana, DDG (Training), NTIPRIT, Sh. Atul Sinha, DDG (Admin.), NTIPRIT, Sh. Vivek Srivastava, Director (Training), DoT Hq., Sh. Vineet Verma, Director (Training), NTIPRIT and Sh. Manoranjan, ADG (Training) were present during the deliberations.

ITS-2018 batch with Hon'ble MoC and Hon'ble MoSC

The Officer Trainees of ITS-2016 and ITS-2018 batch were addressed by Hon'ble Minister of Communications on one more occasion on 8th November, 2019 during the interaction with young officers of DoT.

Foundation Course

Fifteen Week Foundation course is part of Induction Training of ITS and P&T BWS cadre trainees. Foundation course for ITS 2014, ITS-2015, ITS 2016 and P&T BWS 2015 & 2017 batches was completed in F.Y.2019-20. 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.

Completion of Probation:

This year, NTIPRIT has completed induction training for three batches of ITS Officers (ITS-2014 batch, ITS-2015 batch and ITS-2016 batch) and two batches of P&T BWS (P&T BWS-2015 batch and P&T BWS-2016 batch). Valedictory Modules were held for these officers at NTIPRIT.

(a) Valedictory Module of ITS-2014 and P&T BWS-2015 batch:

After completion of 15 weeks Foundation course at HIPA, Gurugram, the Officers of ITS-2014 and P&T BWS-2015 attended the Valedictory module at NTIPRIT. Sh. Anil Kumar Sanghi, Advisor, NTIPRIT graced the occasion and blessed the Officers.

ITS-2014 and P&T BWS-2015 Batch with faculties of NTIPRIT on the occasion of Valedictory Programme.

(b) Valedictory Module of ITS-2015 batch:

After completion of 15 weeks Foundation course at HIPA, Gurugram, the Officers of ITS-2015 batch attended the valedictory module at NTIPRIT. Sh. Anil Kumar Sanghi, Advisor, NTIPRIT graced the occasion and blessed the Officers.

ITS-2015 batch with faculties of NTIPRIT on the occasion of Valedictory Programme.

(c) Valedictory Module of ITS-2016 batch and P&T BWS 2016 batch:

After completion of 15 weeks Foundation course at HIPA, Gurugram, the Officers of ITS-2016 batch and P&T BWS 2016 batch attended the valedictory module at NTIPRIT. Ms. Deepa Tyagi, Sr. DDG, NTIPRIT graced the occasion and blessed the Officers.

ITS-2016 and P&T BWS 2016 batch with faculties of NTIPRIT on the occasion of Valedictor Programme.

JTO Induction Trainings

Induction training for newly recruited officers from JTO-2018/2016 batch was commenced on 16.09.2019 at NTIPRIT.

Group Photograph of JTO-2018 batch with faculties of NTIPRIT on first day of joining.

Completion of Induction Training of JTO-2016 (RL) batch:

30 weeks' induction training for JTO-2016 (RL) batch was conducted in FY 2019-20. On the completion of Induction training, JTO-2016 (RL) batch Probationers were motivated and blessed by Senior officers of NTIPRIT. Ms. V. Sobhana, DDG (Training) chaired the program on 28.06.2019.

JTO-2016 (RL) Batch with faculties of NTIPRIT on the occation of Valedictory Programme.

(iii) Important Seminars/ In Service Courses

'Cyber and Network Security' Course (26.09.2019 to 27.09.2019)

Two days' course on 'Cyber and Network Security' was conducted by NTIPRIT at Hotel Citrus, RDC, Ghaziabad. The course aimed at capacity building of the officers of security vertical of various LSA's in the area of Telecom Network Security and Security Audit. 26 Officers from various LSAs and TRAI attended the course.

Group Photo of participants of Cyber and Network Security course with NTIPRIT faculties

'Artificial Intelligence' Seminar (09-05-2019 to 10-05-2019)

Two days Seminar on Artificial Intelligence was conducted by NTIPRIT at Hotel Fortune Inn Grazia, Ghaziabad. The Seminar covered the technical and ethical aspects of the emerging field of Artificial Intelligence as well as the use cases of AI in Telecom. 34 Officers from various LSAs had attended the course.

Group Photo of participants of the Artificial Intelligence course with Advisor, NTIPRIT

Summary of Seminar/ In-Service Courses conducted by NTIPRIT till December 2019 is as below:

Table 7.3

S. No	Course name	Period	No of participants
1	Artificial Intelligence	09.05.19 to 10.05.19	34
2	ICT in Disaster Management	06.06.19 to 07.06.19	25
3	Smart City	18.06.19 to 19.06.19	21
4	Greening the Telecom for Sustainable Growth	20.06.19 to 21.06.2019	12
5	Cyber & Network Security	26.09.19 to 27.09.19	26
6	RET in Telecom (Solar Power Plant)	10.10.19 to 11.10.19	10
7	4G & 5G Technologies	04.12.19 to 06.12.19	11

(iv) Mandatory Training Programs

Mid-Career Training Program (Technical Component)

The Mid- Carrier Training Programme for ITS officers of different levels was initiated in this financial year 2019-20 for all the three phases (Phase-I for STS Level officers, Phase-II for JAG level officers and Phase-III for SAG level officers). The technical component of MCTP has been conducted for one batch of Phase-I, four batches of Phase II and one batch of Phase-III till December 2019.

Participants of MCTP Phase-III Batch-I with Sh. D.Manna, Member (Services), DoT

ITEC Course (Telecommunication Licensing & Regulation) Participants and faculty of NTIPRIT with Member (S), DoT

The summary of MCTP training conducted by NTIPRIT in the year 2019-20(till December,2019) is as below:

Table 7.4

Sr. No.	MCTP Training Phase	Period of Technical Component of Training	Level of Officers for which training is designed	No. of courses conducted	No. of Trainees Trained
1	Phase-I	2 Week	STS	1	17
2	Phase-II	1 Week	JAG	4	111
3	Phase-III	1 Week	SAG	1	32

JTO to AD promotion linked Mandatory Training Program:

A JTO to AD promotion linked Mandatory Training Program was conducted from 04.11.2019 to 15.11.2019. The training was attended by 29 eligible officers.

(v) International Courses (ITEC)

ITEC Courses:

6 ITEC training courses have been scheduled in the year 2019-20 for International participants under the aegis of Indian Technical and Economic Cooperation Programme of Ministry of External Affairs. The details of three training courses conducted till Dec. 2019 are as below:

ICT in Disaster Management (02.09.2019 to 13.09.2019)

Two weeks ITEC course on 'ICT in Disaster Management' was conducted by NTIPRIT at CDTI, Ghaziabad. Total 14 participants from 10 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 by NDRF team through live Demos. As part of cultural / heritage visit, the participants visited Delhi and Agra during the program.

Group photo of participants of "ICT in Disaster Management course"

5G & IoT (30.09.02019 to 04.10.2019)

One-week course on '5G & IoT' was conducted by NTIPRIT at CDTI, Ghaziabad. Total 25 participants from 14 countries attended the course. The objective of the Course was to familiarize and develop an understanding of 5G and IoT/M2M and their various related aspects. The course coverd the concepts of LTE & LTE Advanced (4G), 5G New Radio, 5G Core Network and different usage

scenario of 5G as well as on IoT/M2M. It also covered Regulatory & Spectrum aspects of 5G &IoT/ M2M. The participants also visited Delhi as part of cultural / heritage Visit.

Group photo of participants of "5G & IoT" course

Telecommunications Licensing and Regulation (16.12.2019 to 20.12.2019)

NTIPRIT conducted 3rd ITEC course in the month of December, 2019. Total 14 participants from 9 countries participated in the course. The objective of the Course was to familiarize the participants with the concepts, evolution and current trends of Licensing & Regulation in Telecom, Universal and affordable access of Telecom services, Spectrum management, Standardization and interoperability of Telecom Networks and Dispute resolution framework. They also visited Historical monuments in Delhi as part of Cultural Visit during the course

Group photo of participants of "Telecommunications Licensing and Regulation" course

Summary of the ITEC Training conducted in the academic year 2019-20 is as below:

Table 7.5				
Sr. No.	**Name of Course**	**Period of training**	**No. of Countries Participated**	**No. of Trainees Participated**
1	ICT in Disaster Management	02.09.2019 to 13.09.2019	10	14
2	5G &IoT	03.09.2019 to 04.10.2019	14	25
3	Telecommunications Licensing & Regulation	160.12.2019 to 20.12.2019	9	14

Overall Summary of Training Courses Conducted by NTIPRIT in year 2019-20:

Table 7.5				
Sr. No.	**Type of Courses**	**Cumulative (from April 2019 to December 2019)**		
		No. of Courses	**No. of Trainees**	**Trainee Days**
1	Induction Course for ITS Group - A Officers	26	97	9049
2	Induction Course for BWS Group - A Officers	11	7	838
3	Induction Course for JTO Group - B Officers	13	13	927
4	In-Service training for DoT officers	7	139	289
5	MCTP	6	160	798
6	ITEC Course	3	53	338
7	JTO to AD Mandatory Training Program	1	29	261
	Total	67	498	12500

Training Courses likely to be conducted from January 2020 to March 2020:

Sr. 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	20	17	1350

2	Induction Training of JTOs Group-B Officers	6	11	800
3	In-service course for Officer of DoT	5	100	200
4	MCTP Courses	3	90	500
5	ITEC Program	3	60	400
	Total	37	278	3250

Apart from class room training, induction training also includes attachment to various units of DoT, Foundation Course etc.

B. National Institute of Communication Finance(NICF)

During the year NICF conducted the following training programme

1. Probationary training was carried out for 2017(19 OTs) & 2018 (17 OTs) Batch IP&TAFS 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, Bharat Darshan experience and other areas. Varied topics were assigned to groups of OTs to write articles on relevant subjects of professional interest. OTs were encouraged to contribute to NICF in-house magazine 'Newsletter', perform in cultural evenings, play and excel in Sports activities, etc. to ensure all-round seamless personality development.
2. NICF has conducted MCT-I for IP&TAFS officers at NICF Campus, Ghitorni, New Delhi (with one week of domestic attachment) w.e.f. 09.09.2019 to 04.10.2019.
3. NICF organised the 'Focus Group Meeting on Artificial Intelligence for Health' under the aegis of ITU/WHO at NICF Campus, Ghitorni, New Delhi, from 13-15 November 2019.
4. Induction Trainings of newly appointed AAOs are being conducted at NICF Ghitorni, New Delhi in various batches.
5. Workshops on various issues such as PFMS/GeM, Digital payments, budget, TDS and filing of return, redefining the role & scope of IA in DoT etc were also conducted.
6. Workshop on GST & e-filing for the participants of Department of Posts was organised exclusively on their request.
7. Similarly, from 15.11.2019 onwards the following training programmes/workshops will be conducted at NICF Ghitorni:

    1) Probationers' Training (2018 & 2019 Batch)

2) AO/Sr. AOs' and AAOs' Induction training

3) Workshop on NPS, USOF, LF & RTI.

4) MCT II & III

8. Departmental Induction Training of Sr. AO/AO has been conducted at NICF Ghitorni, New Delhi.

9. Celebration of Vigilance awareness week during 28.10.2019 to 02.11.2019.

10. Celebration of Constitution Day on 26.11.2019.

11. Yoga Day was celebrated on 21.06.2019 in NICF Campus, Ghitorni, New Delhi successfully with all staff of DoT, and its offices located in Delhi around 50 participants participated.

12. NICF signed Memorandum of Understanding with one of the oldest and reputed institution Administrative Staff College of India to collaborate on various training issues to improve/ enhance training experiences of officer trainees.

13. 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. As a result of this, NICF brought out its first edition of NICF Journal (Sanchar Digest) in September 2019.Apart from this regular NICF newsletter also came out.

14. NICF organized the prestigious Seminar on FDI in Telecom Sector called 'Invest Digicom 2019' in September 2019 in partnership with FICCI & NIPFP which was graced by the Hon'ble Minister of Communications and attended by large numbers of Industry Stakeholders, Regulators, Investors, Academicians, Experts and authorities from different departments. The Seminar was well received.

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, 2019 to December, 2019 the following activities were undertaken:

i) Book Award of Rs. 8,01,900/- (Eight Lakhs One Thousand & Nine Hundred Only) was distributed to the wards of DoT employees from which Rs. 86,500/- was distributed under Girl Child

relaxation & Rs. 29,100/- was distributed under SC, ST, & OBC relaxation. Rs. 6,42,400/- (Six Lakhs Forty-Two Thousand & Four Hundred Only) was distributed to the wards of DoT Employees as Scholarship Award from which Rs. 38,200/- was distributed under Girl Children relaxation &Rs. 39,200/- was distributed under SC, ST & OBC relaxation. Incentive of Rs. 88,700/- (Eighty-Eight Thousand & Seven Hundred Only) was distributed to wards of DoT employees from which Rs. 7,500/- was distributed under Girl Child relaxation.

ii) An amount of approximately Rs. 7,400/- (Rupees Seventy-Four Hundred Only) was spent for the "Entry Fees" for participation in different Inter Ministry sport activities.

iii) An amount of Rs. 60,000/- (Rupees Sixty Thousand Only) has been disbursed to the family members of 03 (Three) deceased employees, Rs. 20,000/- each, as immediate financial assistance.

7.6 SWACHHATTA MISSION

7.6.1 Swachhta Hi Seva Campaign: Swachhta Hi Seva Campaign was organised in DoT during the period 11th September to 2nd October, 2019 as per direction of D/o Drinking Water & Sanitation. The theme of this Campaign was to focus on elimination on Single Use Plastic (SUP).

To observe the campaign in a befitting manner, Department drew up an elaborate Action Plan. Accordingly, the campaign started with "Swachhta Pledge" (which included not to use SUP as far as possible) by officials of this Department on 11th September, 2019. During the campaign, various swachhta activities were undertaken. 2nd October, 2019 was observed as Swachh Bharat Diwas. On this occasion a massive shramdaan was organised in which 200 seniors officers and staff actively participated in shramdaan by way of collection of SUP (Water Bottle primarily) from floors/rooms of buildings and depositing the same in designated dustbins. The accumulated SUPs were later handed over to an NGO namely "Chintan" for recycling.


Officials of DoT taking Swachhta Pledge

Officials participated in SHS Campaign

Officials collecting/segregating SUP

7.6.2 SwachhtaPakhwara: A Swachhta Pakhwada was observed in the Department from 16th – 30th November, 2019 as directed by the D/o Drinking Water & Sanitation. The Department of Telecommunications drew up an Action Plan for "Swachhta Pakhwada" for a focused attention to the cleanliness. The activities chosen, inter-alia, included special cleanliness drive in the office building premises and its surrounding area, cleanliness and hygiene in the Departmental Canteens, disposal of unserviceable office equipment/furniture/other material including e-waste in the Department.

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 the 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 setup a committee on the sexual harassment of women, headed by a lady officer."

7.8 OFFICIAL LANGUAGE

The Official Language Division is under the overall administrative control of Deputy Director General (Coordination & Administration). The composition of the Official Language Division comprises one Director/Joint Director, two Deputy Directors, two Assistant Directors, 10 Senior Translators, 06 Junior Translators, one Section Officer, two Assistant Section Officers and other supporting staff. However, a number of posts in this Division are lying vacant at present.

Activities

During the period 2019-20 (April, 2019 to December, 2019), following items of important work relating to the progressive use of Hindi were undertaken by the Official Language Division: -

(i) 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 thereunder for achieving the targets fixed by the Ministry of Home Affairs, Department of Official Language, in their Annual Programme for the year 2019-20. 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 fully complied with during the period under review.

(ii) 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 and is hoped to be completed as soon as the approval of the Hon'ble Minister of Communications is accorded. 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).

(iii) 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.

(iv) Official Language Inspections of Offices Located in Delhi and Outside by the Ministry

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 2019-20. 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.

In this context, during the period, April, 2019 to December, 2019, 09 official language inspections in various telecom circle offices of Bharat Sanchar Nigam Limited situated across the country, were carried out by the officials of the Official Language Division of this department. Besides these, 01 official language inspection was also carried out in the Delhi -based office of Telecom Engineering Centre during the same period.

(v) 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. During the period under report, 34 officials were nominated by this division for training in various such courses (5 for Hindi stenography and 29 for Hindi typewriting).

(vi) Meetings 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, three such meetings were held on 27.06.2019, 27.09.2019 and 30.12.2019 respectively.

(vii) 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 13.09.2019 to 27.09.2019 in the Department. For the purpose of the promotion of Official Language in the Department, thirteen Hindi competitions were held. 341 officers/officials participated in these competitions. Provision of 13 cash prizes (one first prize, one second prize, one third prize and ten consolation prizes) each for all the nine written competitions and two vocal competitions (Hindi debate and Hindi poetry recitation) has been made , whereas a cash award of Rs.100/- each for every correct answer was given on the spot to all the participants of Hindi Quiz (Hindi Prashna-manch). Certificates will also be given to all the winner participants in near future.

(viii) 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.

(ix) 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

8.1 Complaints and Disciplinary Actions

Complaints are received by the Vigilance Wing of DoT from various sources like Prime Minister's Office / Members of Parliament / CVC / CBI / General Public etc. These complaints are then taken up for investigation to identify the delinquent officers/officials and fix responsibility along with the suggestions for systemic improvements, if any, required.

During the period

(i) 536 complaints handled.

(ii) 15 officers / officials imposed with major & minor penalties.

(iii) 1 official removed from service, 1 official dismissed from the service, 3 officials imposed with reduction to lower stage in time scale. 2 officials imposed with 100 % cut in pension and 7 officals imposed with varying cut in pension. 1 official censured.

(iv) 45 cases for imposition of penalty received from BSNL/MTNL ratified.

(v) 08 appeals against punishment orders decided.

(vi) Prosecution sanction furnished against 01 officer in a CBI case.

Grievance- PG Portal

150 grievance petitions received through Centralized Public Grievance Redress and Monitoring System (CPGRAMS) from various sources viz. Department of Administrative Reforms and Public Grievances, DPG (Cabinet Secretariat), President Secretariat, PMO and Department of Pensions, disposed of during the period.

8.2 Training & Workshop

i) As a special initiative, training sessions were conducted for the probationers of various services of the Department. The trainings were conducted for the probationers of ITS, IP&TAFS.

ii) Vigilance Officers were also sent for training to various Institutions.

8.3 Vigilance Clearance (VC)

This is an important activity of the Vigilance Wing as Vigilance clearance is required at the time of promotion, retirement, obtaining passports, visiting abroad, and deputation to other

Organizations/Departments etc. During the period, Vigilance clearance issued to 4475 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.

8.4 Consultation with statutory/constitutional bodies

i) Consultation with 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. During the period, 12 cases were referred to CVC for advice.

ii) Consultation with the Union Public Service Commission (UPSC)

UPSC is required to be consulted in cases where the Disciplinary Authority is President of India or disciplinary proceedings under Rule 9 of CCS (Pension) Rules, 1972. In addition, UPSC is required to be consulted where the appellate Authority is Hon'ble President of India and also in Review cases where modification in penalty is proposed. During the period, 22 cases were referred to UPSC for advice.

iii) Consultation with the Department of Personnel & Training (DoPT)

The DoPT is consulted in all disciplinary cases where there is a disagreement between Disciplinary Authority (DA) with the UPSC or the CVC, or where these Commissions direct the DA to consult the DoPT.

8.5. Vigilance Awareness Week

Vigilance Awareness Week was observed in the Department from 28th October, 2019 to 2nd November, 2019. The theme for the week was "Integrity – a way of Life ". The week started with Pledge taking ceremony. A signature campaign against corruption was also held. Various competitions like essay, quiz, debate, poster making and slogan writing were held to increase the awareness against corruption, amongst the DoT employees

Vigilance Awareness Week - 2019 was also observed in field units of the DoT spread across the country.

The concluding and prize distribution function was held at DoT HQ, Sanchar Bhawan. Certificates, Mementos and Cash Prizes were awarded to the winners of the competitions held during the week.

8.6 Preventive Vigilance

a) Various activities are monitored under "Review of mechanism to ensure probity amongst Government Servants".

b) Regular meetings are conducted with CVOs of PSUs/Sub-ordinate office/Autonomous body under DoT in order to ensure early disposal of pending complaints and Vigilance matters.

c) The Vigilance profiles of Board Level Officers of the CPSEs namely BSNL, MTNL, TCIL, ITI, BBNL & C-DoT are regularly updated on monthly basis on SOLVE (System for Online Vigilance Enquires) Portal maintained by the Department of Personal & Training.

d) 800 Annual Property Returns of the Officers were scrutinized.

e) A team of Vigilance Wing, DoT constituted in the month of Jan, 2019 examined and investigated various issues related to processing of different types of license applications in Wireless Planning and Coordination (WPC) Wing. The team inspected Regional Licenceing Office (RLO) at Delhi and submitted its report containing important observations regarding multiple use of Bharat Kosh Receipts. Consequently, 5 teams were constituted to audit the receipts in different RLOs across the country. Based on the reports of these teams, final recommendation regarding punitive action against the defaulters & suggestions for systematic improvement were submitted to the concerned wings.

8.7 Miscellaneous activities

(i) Court Cases: Court cases against the Department arise out of Vigilance / Disciplinary matters are handled by Vigilance Wing. 20 cases pending in various courts / tribunals were decided / disposed off. 168 cases are presently being handled by Vigilance Wing.

(ii) RTI Applications; Timely supply of information to citizens is given due importance in Vigilance Wing. During the period, 59 RTI applications have been disposed of by the CPIOs and 14 appeals have been disposed of by First Appellate Authority in Vigilance Wing.

CHAPTER 9

WELFARE OF DIFFERENTLY ABLED PERSONS AND WOMEN

9.1 WELFARE OF DIFFERENTLY ABLED PERSONS

Telecom 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 Telecom 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. The Department provides reservation to the physically challenged in appointments in accordance with the guidelines issued by the Government of India from time to time for effective implementation of the Persons with Disabilities Act, 1995

The Sanchar Bhawan building, which houses the Department headquarter, is constructed in such a manner that level access to various floors and utilities exists and lifts are provided with Braille car panel buttons for unhindered access for persons with disabilities.

Accessibility is not only about giving equal access to everyone, but also about covering uncovered villages and include digitally deprived segments of society as stated in Digital Communications Policy-2018. As part of initiative under AIC, Persons with Disabilities (PwDs) shall be covered under the “Accessible Digital India” programme. The Department is working towards three main strategies that are as follows: -

(i) Ensuring Inclusion of uncovered areas and digitally deprived segments of society by channelizing the Universal Service Obligation Fund (USOF) for:

- Ensuring connectivity for all uncovered areas in the North Eastern States, Himalayan region, LWE areas, Aspirational Districts, Islands and Border Areas
- Marginalised communities, women and persons with disabilities
- Promoting innovative, effective and scalable alternate technologies for remote areas
- Enabling access provision by any entity capable of fulfilling the Universal Service Obligation

(ii) Reviewing the scope and modalities of USOF:

- Redesigning the USOF and broadening its objectives to enable universal broadband access including for economically and socially weaker sections in urban pockets
- Strengthening institutional capacity of USOF to ensure effective rollout of services in uncovered, remote and rural areas

(iii) Formulation of Accessibility Standards for Communications under Section 40 of RPwD Act 2016: DoT has accepted International standards for achieving universal accessibility for persons with disabilities (PwDs).

(iv) Acceptance of TRAI Recommendations on "Making ICT accessible for Persons with Disabilities": On basis of Rights of Persons with Disability Act 2016, Department of Telecommunications has the mandate to formulate the accessibility standards for Information and Communication Technology (ICT) related services for PwDs. Therefore, Telecom Regulatory Authority of India (TRAI) suo moto came up with recommendations on "Making ICT Accessible for Persons with Disabilities" dated 09.07.2018. These recommendations have been approved by the Hon'ble Minister for Communications and Information Technology as per recommendation of the Digital Communications Commission (DCC). This Department has further requested concerned Ministries/Agencies/Stakeholders to implement the relevant extracts of the TRAI recommendations for improving accessibility in telecom services.

DoT Website is having various accessibility features conforming to GIGW guidelines (WCAG ver.1) issued by NIC, for the benefit of Persons with Disabilities under content Management framework.

(v) Ensuring accessible built up environment for Persons with Disabilities by retrofitting of Public Buildings under the control of Department of Telecom: Under Accessibility of built up environment, Central Government Ministries/Departments have to ensure retrofitting of their respective buildings under their control. All concerned authorities, including PSUs (BSNL, MTNL, ITI, BBNL and TCIL) and C-DoT (an autonomous body) under the administrative control of DoT have been asked to identify offices/buildings for making them accessible for Persons with Disabilities (PwDs) in accordance with Harmonized Guidelines and Space Standards for Barrier Free Environment for PwDs and Elderly Persons, 2016 issued by M/o Urban Development. They have also been advised to keep necessary budgetary provisions ready. In compliance to these directions, several buildings have already been made compliant to Persons with Disabilities.

9.1.1 Centre for Development of Telematics (C-DOT)

- C-DOT follows guidelines issued by Government of India with respect to reservations in jobs for persons with disabilities.
- The differently abled employees are eligible for double the rates of transport allowance.
- The C-DOT Campus at Delhi has been constructed in such a manner so as to ensure barrier free environment for the persons with disabilities. The main entrance/exit can be approached through a ramp together with stepped entry. Even elevators connecting the various working areas have been installed in way to facilitate persons with disabilities to move around freely from one wing to another.

9.1.2 Bharat Sanchar Nigam Limited (BSNL)

In respect of schemes for the benefit of differently-abled persons, the following schemes are in existence in BSNL:

- Double the rates of Transport Allowance are eligible for differently abled employees.
- Rate of transport allowance to blind or orthopedically constrained 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.
- Grant of Child Adoption leaves of 180 days to female BSNL employees and extension of the facility of Paternity leave to adoptive fathers.

9.1.3 Mahanagar Telephone Nigam Limited (MTNL)

MTNL has always endeavored towards upliftment of social status of differently abled people by innovating and executing action plans falling under its realm. Several steps have been taken by MTNL in fulfilling its social responsibility and few other innovative schemes are being devised for providing a respected status in the society to these people.

The provisions of reservation for such candidates, as per Government of India Rules have been made in recruitment of officers in various streams. Further, to avoid delay in allotment of PCOs, mobile Booths are being provided to differently abled people based on CDMA/GSM technology.

As on 31.09.2019, 0.49% of total MTNL manpower comprises differently abled employees.

9.1.4 ITI Limited

The Facilities being provided to persons with disabilities are detailed below:

- Differently abled employees who are residing in the township are given special allowance at the rate of 5% of Basic pay subject to maximum of ₹75/- per month
- Those employees who are not residing in Company's township but are utilizing Company's Transport for commuting between residence to factory are given special allowance at the rate of 5% of Basic Pay subject to maximum of ₹100/- per month.
- Differently abled employees are permitted 10 minutes grace time to Punch In and out for marking their attendance at the commencement and closure of shift respectively.
- Differently abled employees are allotted quarters on out of turn basis
- As per the government directive ITI has been maintaining 4% reservation for the differently abled in recruitment and the reservation in promotion has also been maintained wherever applicable.
- For differently abled 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 Consultants India Limited (TCIL)

- Preference is given to differently abled persons in the matter of recruitment.
- Concessions in service conditions are admissible to all differently abled employees as per guidelines. Transport allowance at double the normal rate is given to Physically Challenged employees as per government guidelines.
- No differently abled employee is posted in remote areas where hardship conditions are involved. Their postings/transfers are considered sympathetically.
- The cases/representations/grievances of disabled persons if any are considered favorably.
- They are treated equally in line with other employees.
- A liberal view is taken while forwarding application of differently abled candidates outside.
- Special facilities like separate lift for disabled, stair chair at reception is available for their comfort and convenience.

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 Mahanagar Telephone Nigam Limited (MTNL)

- MTNL has always endeavored towards women participation in the Organization and the Nation Building. This can be assessed from the manpower figures as on 31.09.2019, where 26.09% of total manpower comprises women employees.
- Special care are 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.
- For women working in the same positions, same remuneration is paid and there is no discrimination whatsoever in payment of compensation on the basis of Caste, Gender, Religion etc. The service conditions are uniform and there is no gender bias.
- 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.
- Maternity/Paternity leave is also available to employees. Child Care Leave is provided for a maximum period of two years (i.e. 730 days) with pay up to 3 months and without pay up to 2 years inclusive of 3 months with pay. Creche facility has also been provided for women employees with infants.
- 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.

9.2.2 Bharat Sanchar Nigam Limited (BSNL)

In BSNL, schemes for the benefit of women, inter-alia, include

- 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.

9.2.3 Telecommunications Consultants India Limited (TCIL)

- No discrimination on the basis of gender is done and Women employees are treated equally in line with other male employees.
- 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. As a welfare measure for Women employees, various benefit schemes are incorporated in TCIL. The positive results of the welfare measures are evident from the increase of women employees in the managerial and supervisory category. Separate rest rooms are available for women on each floor.
- Women employees are today holding some of the higher management/ authoritative posts in TCIL and more and more women are involved in decision making. No discrimination is made on the basis of caste category/weaker sections. All are treated equally. We also have a Sexual Harassment Committee constituted by Women employees for addressing the grievances of women employees regarding harassment and for welfare & security of Women employees.
- Various Leadership Program and gender sensitization sessions were held in 2018-19 in TCIL for Women employee.
- Child Care Leave committee has been formed in TCIL and is in process for implementation for women employee for taking care and rearing to the needs of children for better work life balance.

9.2.4 ITI Limited

The major facilities being provided to women employees are as follows:

- Separate lunch room in canteen, rest rooms and crèches have also been provided in the Units.
- 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 Raebareli Plants which emphasize women and child welfare.
- 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.

- 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.
- Care is taken to ensure that women employees are nominated for training programmes, which are need based.
- 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.
- Company is celebrating Women's Day every year to encourage women employees.

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 an organizational culture that reflects 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. Total employees promoted to higher grades 26% of them were women, during
- 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

10.1 AUDIT OBSERVATIONS OF C & AG

Status of C&AG Audit Paras pending as on 31st March 2019

S. No.	Year	Report No.	No. of Paras/ PAC Reports on which ATNs have been submitted to PAC after vetting by Audit (from April 2018 – March 2019)	Details of the CAG Paras* / PAC Report** on which ATNs are pending as on 30/03/2019		
				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
1.	2016-17	4 of 2016	Nil	Nil	30	Nil
2.	2016-17	29 of 2016	Nil	Nil	Nil	Nil
3.	2017-18	11 of 2017	01	Nil	01	Nil
4.	2017-18	35 of 2017	01	Nil	01	Nil
Total			02	Nil	32	Nil

** Total C&AG Audit Paras of DoT pending as on 31/03/2019 = 42 [32 (Under Modification) + 10 (Sent to Audit)]*

*** Total paras of 03 PAC Report pending as on 31/03/2019 = 07 [07 (Sent to Audit)]*

CAG Report No. 4 of 2016 for Six TSPs for financial year 2006-07 to 2009-10 has been received and implemented in full. Out of 135 CAG sub paras, 116 sub paras have been settled. Reconciliation of the underreporting detected by CAG vs amount raised by DoT in revised Demand Notice is given in the table below:

(Rupees in crore)

Particulars	Idea	Airtel	Vodafone	Reliance	Aircel	Tata	Total
Underreporting/Non consideration detected by CAG (As per CAG Report No.4)	3383.60	8748.02	6215.65	14713.00	967.92	12017.36	46045.59
TotalUnderreporting/ Non consideration added back to AGR as per Revised Demand Notice (based on CAG + Special Audit Report)	4933.90	13187.37	9680.28	18021.50	1152.81	14547.46	61523.46

CAG Report No. 11 & 35 of 2017 has been received and implemented. Process for admittance of paras is underway.

Summary of important audit observations included in Audit Report No.21 of 2018 ((Ministry of Communications and Ministry of Electronics & Information Technology)

S.No	Important Audit observations
Department of Telecommunications	
1	A Performance Audit on **"Spectrum Management in DoT" was conducted which revealed the following** (i) No action/deliberation for re-farming of 900 MHz band was initiated by Wireless Planning & Coordination (WPC) of DoT. The continuing use of spectrum in these bands by Defence results in loss of opportunity cost for the nation as a whole. (ii) DoT had not taken any action for refarming of 900 MHz spectrum assigned to Railways which in turn adversely affected the optimal utilization of spectrum. (iii) A guard band is a narrow frequency range that separates two ranges of wider frequency. During harmonization of 1800 MHz band, DoT made a provision for 0.2 MHz guard band and one additional guard band of 0.2 MHz in between this spectrum band in all 22LSAs. It was also noticed that the location of the additional guard band of 0.2 MHz considered by the DoT was varying from LSA to LSA. Additional guard band of 4.4 MHz spectrum was not considered while putting up spectrum in 1800 MHz band for auction and thus spectrum in 1800 MHz, which is a prime band, remained unutilized. (iv) DoT has not withdrawn the excess spectrum proposed to be surrendered by BSNL till March 2018. Financial impact due to delay in withdrawal of excess spectrum held by BSNL is Rs' 520.79 crore. (v) DoT constituted a committee in December 2012 to look into the allotment/assignment of spectrum in various categories of spectrum users covering different categories of licences and authorizations. The Committee proposed that the spectrum allotment in Microwave band to all the service providers should be allotted through market related process (auction). However, allocation of MW Access spectrum had been done on First Come First Serve (FCFS) basis. Though carriers were available in other bands and propagation characteristics of MW A spectrum in lower bands (say 13/15 GHz) was better compared with higher bands (18/21 GHz and beyond), allotment of MW A to Access Service providers was withheld by DoT since June 2010. Non-allotment of MW A spectrum to Access Service Providers despite availability resulted in loss of revenue to the Government. (vi) The spectrum charges for MW access/backbone Spectrum and satellite Spectrum of National Long Distance (NLD)and International Long Distance (ILD) networks were levied on formula basis instead of revenue share basis (i.e. percentage of AGR), as being done for MW access spectrum of cellular network which indicated non-uniform policy in DoT. (vii) The National Frequency Register (NFR) in Automatic Spectrum Management System (ASMS) was not being updated at the time of assignment of new frequencies and/or surrender/withdrawal of previously assigned frequencies.

	(viii) Wireless Monitoring Headquarter (MHQ)/Regional Headquarters (RHQs) nor International Monitoring Station (IMS)/Wireless Monitoring Station(WMS)/Inspection units had updated base of wireless licensees and frequency assignments since 2009-10 which is to ensure compliance with regulatory provisions governing radio communications and to intervene with national or foreign stations (ix) Number of equipment/Mobile Monitoring System (MMS) vehicles was supplied around Large 2004-05 under World Bank funded Project to all the wireless monitoring stations for carrying out the various types of monitoring activities. These equipment/MMS vehicles went faulty and remained so for several years.

	Bharat Sanchar Nigam Limited
1	BSNL failed in implementing Comprehensive Telecom Development Plan) CTDP (for North Eastern Region approved by the Cabinet in September 2014. This was because of failure of the major tenders under CTDP as given below: ➢ Tender relating to Survey, Planning, Supply, Installation, Testing, Commissioning, Integration with existing core network and Operations & Maintenance for five years. of 2G GSM Network along with VSAT, HUB & radio backhaul to provide coverage in uncovered villages at an estimated project cost of Rs 1460 crore in April 2016. ➢ Tender relating to laying of UG cable, cable ducts, etc. issued by COM Telecom Stores, Kolkata in February 2015 and the tender for procurement of DWDM equipment floated by BSNL Corporate office in February 2015. Thus, due to failure of the above two major tenders the objective of CTDP i.e. rollout for 2G coverage in uncovered areas of NER and OFC Ring connectivity along with augmentation of transmission media was yet to be achieved. Regional Trunk Planning Committee (RTPC) approved (April 2008 and June 2014) 116 OFC routes for rehabilitation work in Assam, NE-I and NE-II Circles. The works were to be executed by N01ih East Task Force (NETF), Guwahati. The progress of work was 10 per cent in Assam and nil in NE-I and NE-II as on date and the delays ranged between 3 to 10 years. Due to poor progress of rehabilitation OFC work in the region, BSNL hired media mostly from M/s Oil India Ltd and M/s Power Grid Corporation of India Ltd (PGCIL). Nagaland does not have a single tower within 10 Km range of 215 Km long international border with Myanmar while the tower density was 130 Km/tower in Arunachal Pradesh, 99.5 Km / tower in Manipur and l70 Km/tower in Mizoram. Further, although MHA had proposed to DoT for creation of communication infrastructure in the form of towers in the border areas with the funds available under USOF, DoT stated that DoT/USOF did not propose to fund the provision of mobile services in border and naxal affected areas. Thus, even though MHA initiated the proposal for improving telecom services in border areas of North Eastern Region as early as 2014, there was virtually no progress resulting in spill-over signals from neighboring countries being used by the civilians posing threat to national security/economy. Mean time to Repair)MTTR (is the sum of duration of each repair time in hours for all the fault incidences in a quarter divided by total number of fault incidences in a quarter. MTTR was higher than the bench mark of “less than or equal to eight hours” fixed by Telecom Regulatory Authority of India)TRAI(in Assam, NE-I, ETR Circles and Sikkim SSA during the years from 2014-15 to 2016-17

CHAPTER 11

ANNEXURES

1	**Statistical Supplement**
	• Telephone per 100 Population-Urban/Rural (Tele-density) • Number of Telephones
2	**Acronyms**
3	**Organisation Chart**

Table 1

Annexure-1a

Telephone per 100 Population-Urban/Rural (Tele-density) as on 30th November 2018 and 2019.															
Sl.No.	Service Area	Tele-Density						Telephones						% of Rural Phones to Overall Phones	
		Overall		Urban		Rural		Overall		Urban		Rural			
		Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19
1	ANDHRA PRADESH	97.88	97.48	182.21	182.87	65.02	64.13	88258159	88501659	46070686	46628329	42187473	41873330	47.80%	47.31%
2	ASSAM	65.29	70.35	165.82	176.53	45.09	48.66	21825710	23759015	9272825	10115449	12552885	13643566	57.51%	57.42%
3	BIHAR[1]	61.92	59.27	166.21	159.17	45.10	43.10	87807793	84920819	32742858	31762208	55064935	53158611	62.71%	62.60%
4	GUJARAT	109.21	103.77	155.32	148.18	74.78	70.16	71596576	68734013	43532707	42275591	28063869	26458422	39.20%	38.49%
5	HARYANA	97.49	97.43	148.69	139.51	66.72	71.58	27819701	28165412	15926011	15345010	11893690	12820402	42.75%	45.52%
6	HIMACHAL PRADESH	145.89	148.81	332.97	401.85	120.13	113.48	10571383	10859954	2920115	3592552	7651268	7267402	72.38%	66.92%
7	JAMMU & KASHMIR	90.67	77.39	166.14	154.16	60.65	46.54	11560789	9952721	6027681	5682314	5533108	4270407	47.86%	42.91%
8	KARNATAKA	110.83	108.52	177.31	163.99	66.96	71.40	70721670	69772221	44981081	42270617	25740589	27501604	36.40%	39.42%
9	KERALA	125.12	124.65	266.24	267.61	77.55	76.57	45392517	45439526	24350231	24550754	21042286	20888772	46.36%	45.97%
10	MADHYA PRADESH[2]	72.16	69.29	139.18	136.60	46.23	43.01	77599279	75437191	41754166	41757817	35845113	33679374	46.19%	44.65%
11	MAHARASHTRA	94.46	91.99	133.30	132.59	71.37	67.45	95902810	94270891	50464227	51177326	45438583	43093565	47.38%	45.71%
12	NORTH-EAST[3]	83.49	84.36	184.26	175.40	48.51	52.39	11977678	12219383	6810369	6603727	5167309	5615656	43.14%	45.96%
13	ORISSA	76.86	76.53	144.21	144.48	61.82	61.15	33335445	33431620	11418425	11647720	21917020	21783900	65.75%	65.16%
14	PUNJAB	126.08	124.24	180.20	177.68	81.14	78.85	40110353	39932617	26005246	26229648	14105107	13702969	35.17%	34.32%
15	RAJASTHAN	88.15	86.15	164.08	169.72	63.76	59.22	66637945	65924226	30157082	31645820	36480863	34278406	54.74%	52.00%
16	TAMIL NADU[4]	117.59	115.93	134.74	124.88	89.02	100.39	84802996	84015730	60718565	57423823	24084431	26591907	28.40%	31.65%
17	UTTAR PRADESH - [East]	70.01	66.10	140.29	136.49	48.74	44.78	102005557	95934797	42650104	42210122	59355453	53724675	58.19%	56.00%
18	UTTAR PRADESH - [West][5]							64830263	63841068	35026673	34618494	29803590	29222574	45.97%	45.77%
19	WEST BENGAL[6]	72.77	68.53	164.58	177.59	57.18	49.95	58685272	55693903	19268899	21010816	39416373	34683087	67.17%	62.27%
20	KOLKATTA	170.10	161.33	#	#	#	#	27707556	26537089	24763849	24527628	2943707	2009461	10.62%	7.57%
21	DELHI	235.88	237.72	#	#	#	#	54261547	56232485	51787614	54664777	2473933	1567708	4.56%	2.79%
22	MUMBAI	164.42	164.10	#	#	#	#	40374140	41084536	38126718	39295661	2247422	1788875	5.57%	4.35%
ALL- INDIA		91.22	88.81	159.57	156.89	59.30	56.71	1193785139	1174660876	664776132	665036203	529009007	509624673	44.31%	43.38%

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 BSNL(PSU), MTNL(PSU), AUSPI (Private-Wireline,WLL & GSM) and COAI (Private-GSM).

Table 2

Annexure-1b

Number of Telephones as on 30th November 2018 and 2019.

Sl. No.	Service Area	Wireline Phones						Wireless Phones						TOTAL TELEPHONES	
		TOTAL		PSUs' Operators		Private Operators		TOTAL		PSUs		Private Operators			
		Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19	Nov.'18	Nov.'19
1	ANDHRA PRADESH	1428825	1275020	1002188	809997	426637	465023	86829334	87226639	10120866	9927070	76708468	77299569	88258159	88501659
2	ASSAM	121917	102227	119097	98837	2820	3390	21703793	23656788	2437570	2730679	19266223	20926109	21825710	23759015
3	BIHAR[1]	242468	167811	228431	155193	14037	12618	87565325	84753008	4812751	5140243	82752574	79612765	87807793	84920819
4	GUJARAT	1223903	1064047	1008158	836759	215745	227288	70372673	67669966	5665443	6076716	64707230	61593250	71596576	68734013
5	HARYANA	282679	250328	220778	187134	61901	63194	27537022	27915084	4895554	4985316	22641468	22929768	27819701	28165412
6	HIMACHAL PRADESH	118696	102858	113704	99302	4992	3556	10452687	10757096	2747851	2940044	7704836	7817052	10571383	10859954
7	JAMMU & KASHMIR	106247	122540	106247	122540	0	0	11454542	9830181	1216613	1269058	10237929	8561123	11560789	9952721
8	KARNATAKA	2173522	2092887	1043592	933093	1129930	1159794	68548148	67679334	7100130	7320502	61448018	60358832	70721670	69772221
9	KERALA	1908546	1777687	1808479	1677609	100067	100078	43483971	43661839	10838850	10928286	32645121	32733553	45392517	45439526
10	MADHYA PRADESH[2]	927255	835329	656829	572546	270426	262783	76672024	74601862	6053950	6302009	70618074	68299853	77599279	75437191
11	MAHARASHTRA	1497466	1372108	1135855	935736	361611	436372	94405344	92898783	6819600	7128441	87585744	85770342	95902810	94270891
12	NORTH-EAST[3]	107165	94304	106895	94064	270	240	11870513	12125079	1721794	1465344	10148719	10659735	11977678	12219383
13	ORISSA	240180	211088	227956	195006	12224	16082	33095265	33220532	5545728	5905152	27549537	27315380	33335445	33431620
14	PUNJAB	800282	701626	415876	337178	384406	364448	39310071	39230991	5269546	5679305	34040525	33551686	40110353	39932617
15	RAJASTHAN	555812	482152	458062	385204	97750	96948	66082133	65442074	5668470	6115055	60413663	59327019	66637945	65924226
16	TAMIL NADU[4]	2233666	2035013	1463431	1281102	770235	753911	82569330	81980717	11850637	12252922	70718693	69727795	84802996	84015730
17	UTTAR PRADESH - [East]	452767	389356	358167	302460	94600	86896	101552790	95545441	11905419	11601074	89647371	83944367	102005557	95934797
18	UTTAR PRADESH - [West][5]	311852	264711	275117	227643	36735	37068	64518411	63576357	5902048	5917215	58616363	57659142	64830263	63841068
19	WEST BENGAL[6]	249683	175136	245381	170869	4302	4267	58435589	55518767	1552139	2021069	56883450	53497698	58685272	55693903
20	KOLKATTA	735274	648754	506268	415297	229006	233457	26972282	25888335	1760312	1790275	25211970	24098060	27707556	26537089
21	DELHI	3203511	3224109	1495038	1427369	1708473	1796740	51058036	53008376	2223150	2187738	48834886	50820638	54261547	56232485
22	MUMBAI	3039532	2877327	1777792	1718280	1261740	1159047	37334608	38207209	1255711	1193720	36078897	37013489	40374140	41084536
ALL- INDIA		21961248	20266418	14773341	12983218	7187907	7283200	1171823891	1154394458	117364132	120877233	1054459759	1033517225	1193785139	1174660876

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 BSNL(PSU), MTNL(PSU), AUSPI (Private-Wireline,WLL & GSM) and COAI (Private-GSM).

Annexure-2

ACRONYMS

2G	Second Generation
3G	Third Generations
ACC	Accounts Calling Card
ADC	Access Deficit Charge
ADSL	Asymmetrical Digital Subscriber Line
AGR	Adjusted Gross Revenue
AI	Artificial Intelligence
AIMS	Advance Intelligent monitoring system
ALTTC	Advanced Level Telecom Training Centre
ANURAG	Advance Numerical Research & Analysis Group
APT	Asia Pacific Telecommunications
ATM	Asynchronous Transfer Mode
ATNs	Action Taken Notes
AWG	Asia-Pacific Tele-community Wireless Group
BBNL	Bharat Broadband Network Limited
BBWT	Broadband Wireless Terminal
BHIM	Bharat Interface for Money
BMCSN	Broadband Multimedia Convergent Service Networks
BPO	Business Process Outsourcing
BRBRAITT	Bharat Ratna Bhim Rao Ambedkar Institute of Telecom Training
BSNL	Bharat Sanchar Nigam Limited
BTRC	Bangladesh Telecommunication Regulatory Commission
BTS	Base Transreceiver Station
BTSs	Base Terminal Stations
BWA	Broadband Wireless Access
C&AG	Comptroller and Auditor General

CACT	Component Approval Centre for Telecom
CAD	Computer Aided Design
CAF	Customer Acquisition Form/ Customer Application Form
CAG	Comptroller and Auditor General
CAGs	Consumer Advocacy Groups
CAIR	Centre for Artificial Intelligence and Robotics
CCA	Controller of Communications Accounts
CCEA	Cabinet Committee on Economic Affairs
CCMS	Customer complaints monitoring system
CCR	Call Completion Ratio
CCS	Cabinet Committee on Security
CDMA	Code Division Multiple Access
CDNs	Content Delivery Networks
C-DoT	Centre for Development of Telematics
CDR	Call Detail Record
CELI	Centre of Excellence for Lawful Interceptor
CERT	Computer Emergency Response Team
CETTM	Centre for excellence in telecom technology and management
CIDA	Canadian International Development Agency
CiSTB	C-DOT Ineteroperable Set-top Box.
CLIP	Callers Line Identification Protocol
CMC	Central Monitoring Centre
CMMI	Capability Maturity Model - Integrated
CMPs	Cellular Mobile Phones
CMRTS	Captive Mobile Radio Trunking Service
CMS	Centralized Monitoring System
CMTS	Cellular Mobile Telephone Service
COMAC	Centralised Operation & Maintenance Centre

CoP	Consumer Outreach Programmes
CPE	Customer Premises Equipment
CPGRAMS	Centralized Public Grievance Redress and Monitoring System
CPGRAMS	Centralized Public Grievance Redressal And Monitoring System
CSC	Community Service Centre
CSMS	Customer Service Management System
DAR&PG	Department of Administrative Reforms and Public Grievances
DCC	Development Coordination Committee
DCME	Digital Circuit Multiplication Equipment
DCN	Data Communication Network
DDG	Deputy Director General
DEAL	Defence Electronics Application Laboratory
DECT	Digital Enhanced Cordless Telephone
DeitY	Department of Electronics and Information Technology
DGT	Director General Telecom
DIAS	Direct Internet Access System
DLC	Digital Loop Carrier
DND	Do Not Disturb
DoE	Department of Expenditure
DoPT	Department of Personnel and Training
DoS	Department of Space
DoT	Department of Telecommunications
DPR	Detailed Project Report
DR	Disaster Recovery
DSPT	Digital Satellite Phone Terminal
DSS	Digital Switching System
DTH	Direct-to-Home
DWDM	Dense Wavelength Division Multiplexing

EFC	Expenditure Finance Committee
E-KYC-	Know Your Customer
ELCINA	Electronic Industries Association of India
EMF	Electro Magnetic Field
EMS	Element Management system
EMTS	Express Money Transfer Service
EPC	Evolved Packet Core
ETSI	European Tele Standards Institute
eUICC	embedded Universal Integrated Circuit Card
FAS	Fibre Access System
FDI	Foreign Direct Investment
FDMA	Frequency Division Multiple Access
FFLS	Fibre Fault Localization System
FIGI	Financial Inclusion Global Initiative
FMCP	Fixed Mobile Converged Platform
FRS	Fault Repair Service
FTII	Indonesian Information Technology Federation
GDP	Gross Domestic Product
GMDSS	Global Maritime Distress and Safety System
GMPCS	Global Mobile Personal Communication by Satellite
GP	Gram Panchayat
G-PON	Gigabit Pasture Optical Network
GPS	Global Positioning System
GPSS	Gateway Packet Switching System
GRs	Generic Requirements
GSMA	Groupe Speciale Mobile Association
GUI	Graphical User Interface
HAG	Higher Administrative Grade

HCSPSS	High Capacity Solar Power Supply System
HECS	High Erlang Capacity Switch
HSCC	Hospital Service Consultancy Corporation
HSDL	High bit rate Digital Subscriberline
I&B	Information and Broadcasting
IAMAI	Internet and Mobile Association of India
IAPs	Innovation Action Plans
IEM	Independent External Monitor
IFRB	International Frequency Regulation Board
ILA	In-line Amplifier
ILD	International Long Distance
ILL	Internet Leased Line
I-MADE	Innovation in Mobile Application Development Ecosystem
IMC	India Mobile Congress
IMEI	International mobile equipment identity
IMRB	Indian Marketing Research Bureau
IMS	IP Multi-media System
IN	Intelligent Network
INMARSAT	International Mobile Satellite Organization
INSAT	Indian National Satellite
INTELSAT	International Telecommunication Satellite Organization
IP and P	Industrial Policy and Promotion
IPDR	IP Detail Record
IP-I	Infrastructure Provider-I
IPLC	International Private Leased Circuit
IPR	Intellectual Property Right
Ipv6	Internet Protocol Version 6
IRR	International Radio Regulations

IRs	Interface Requirements
ISAC	Information Sharing and Analysis Centre
ISDN	Intigrated Services Digital Network
ISMES	International Satellite Monitoring Earth Station
ISP	Internet Service Provider
ITI Ltd	Indian Telephone Industries Limited
ITTM	Institute of telecom, technology & management
ITU	International Telecommunications Union
ITU-D	International Telecommunication Union-Development Sector
ITU-R	International Telecommunication Union- Radiocommunication Sector
ITU-T	International Telecommunication Union-Telecom Sector
IUC	Interconnection Usage Charge
IVRS	Interactive Voice Response System
IWTA	Indian Wireless Telegraphy Act
JAM	Jan Dhan-Aadhar-Mobile
KPO	Knowledge Process Outsourcing
Lab	Laboratory
LD	Liquidity Damages
LEA	Law Enforcement Agency
LMDS	Local Multi-Point Distribution System
LMLC	Low Mobility Large Cell
LOI	Letter of Intent
LSA	Licensed Service Area
LTE-A	Long Term Evolution- Advance
LWE	Left Wing Extremism
M2M	Machine to Machine
MAX-NG	MAX – Next Generation
MCIBS	Microprocessor Controlled Intelligent Building Systems

MCPC	Multi Channel Per Carrier
MHA	Ministry of Home Affairs
MLLN	Managed Leased Line Network
MMS	Multimedia Messaging Service
MNP	Mobile Number Portability
MNRE	Ministry of New and Renewable Energy
MNS	Network Management System
MoF	Ministry of Finance
MoU	Memorandum of understanding
MPLS	Multi Protocol Label Switching
MSC	Mobile Switching Centre
MSITSL	MTNL STPIIT Services Ltd.
MSME	Ministry of Micro Small and Medium Enterprises
MSS	Mobile Satellite System
MTL	Millennium Telecom Limited
MTNL	Mahanagar Telephone Nigam Limited
MUX	Multiplexer
MWC	Mobile World Congress
NCLT	National Company Law Tribunal
NDA	Non-Disclosure Agreement
NFAP	National Frequency Allocation Plan
NFR	National Frequency Register
NFS	Network for Spectrum
NGN	Next Generation Networks
NGN-IN	IN in NGN
NHAI	National Highway Authority of India
NIB	National Internet Backbone
NICF	National Institute of Communication Finance

NITI	National Institution for Transforming India
NLD	National Long Distance
NLDS	National Long Distance Service
NMS	Network Management System
NOC	Network Operation Centre
NOFN	National Optical Fiber Network
NPLC	National Private Leased Circuit
NSSO	National Sample Survey Organization
NTIPRIT	National Telecommunications Institute for Policy Research, Innovation and Training
NTP	National Telecom Policy
NTP	New Telecom Policy
NYSF	New York Stock Exchange
OAM	Operation and administrative Module
OCN	Optical Core Network
OFC	Optical Fiber Cable
OLIC	Official Language Implementation Committee
OLT	Optical Line Termination
OLTE	Optical Line Terminating Equipment
OPAP	Outdoor Public Wi-Fi Access Points
OSINT	Open Source Intelligence
OSP	Other Service Provider
OTN	Optical Transport Network
PAC	Public Accounts Committee
PCB	Printed Circuit Board6Pm
PCI	Prime Custodian Interface
PCI	Prime Custodian of Interception
PCR	Priority Call Routing

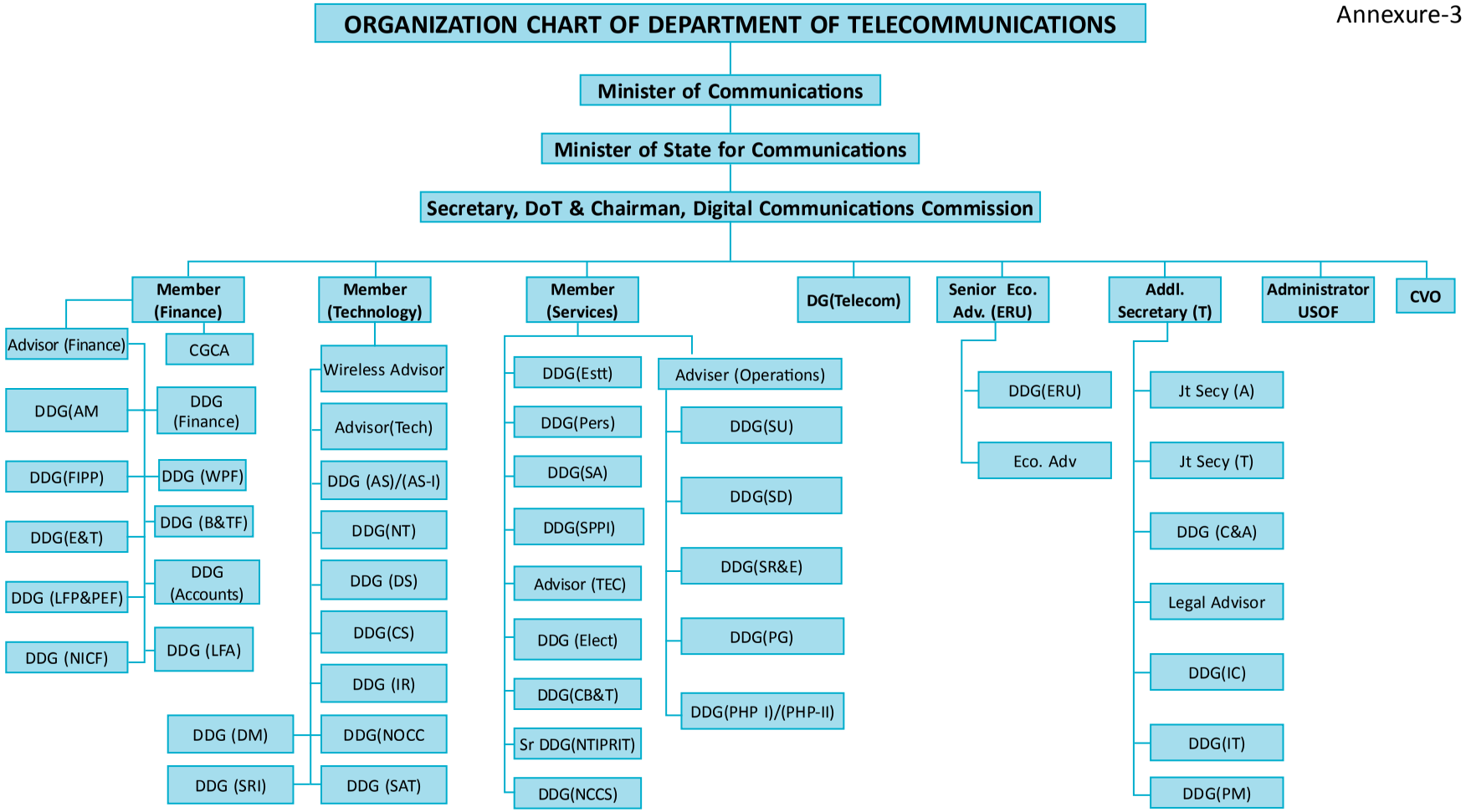
PDO	Public Data Office
PFMS	Public Financial Management System
PG	Public Grievance
PIA	Photo Identity Address
PMA	Preferential Market Access
PMH	Prime Minister House
PMO	Prime Minister Office
PMRTS	Public Mobile Radio Trunk Service
POI	Point of Interconnection
PON	Passive Optical network
PoS	Point of Sale
POT	Plain Old Telephone
POTP	Packet Optical Platform
PRS	Premium Rate Service
PSTN	Public Switching Telecom Network
QOS	Quality of Service
QTS	Quality of Telephone Service
R&D	Research and Development
RABMN	Remote Area Business Message Network
RAN	Radio Access Network
RDSS	Radio Data System
RMC	Regional Monitoring Centre
ROADM	Re-configurable Optical Add / Drop Multiplexer
RoW	Right of Way
RRB	Radio Regulation Board
RRM	Radio Resource Management
RTTC	Regional Telecom Training Centre
SaaS	Software as a Service

SACFA	Standing Advisory Committee on Radio Frequency Allocation
SAG	Senior Administrative Grade
SAR	Specific Absorption Ratio
SAS	System of Accounting Separation
SBM	Signal Base Module
SDCA	Short Distance Charging Area
SDCN	Secure and dedicated communication network
SDG	Sustainable Development Goals
SDH	Synchronous Digital Hierarchy
SDN	Software Defined Network
SIM	Subscriber Identity Module
SOP	System Operating Procedure
SPIC	System Planning & Implementation Centre
SSA	Secondary Switching Area
STM	Synchronous Transport Module
STPI	Software Technology Parks of India
STRC	Service Test Result Certificate
SWAN	State Wide Area Network
TAX	TAX Automatic Exchange
TBR	Terabit Router
TCOE	Telecom Centre of Excellence
TCP	Transmission Connection Protocol
TDM	Time Division Multiplex
TDMA	Time Division Multiple Access
TDSAT	Telecom Dispute Settlement Appellate Tribunal
TEC	Telecommunication Engineering Centre
TEPC	Telecom Equipment and Services Export Promotion Council
TERM	Telecom Enforcement, Resource and Monitoring

TFS	Toll Free Services
ToR	Top – of the Rack
ToT	Transfer of Technology
TPR	Technical Performance Requirements
TRAI	Telecom Regulatory Authority of India
TSERC	Telecom Sectoral Emergency Response Centre
TSP	Tribal Sub Plan
TSPs	Telecom Service Providers
TTL	Telecom Testing Laboratory
TTO	Telecommunications Tariff Order
UAL	Universal Access Levy
UASL	Unified Access Service License
UCC	Unsolicited Commercial Communication
UHF	Ultra High Frequency
UL	Unified License
UMS	Unified Messaging Service
USF	Universal Service Fund
USL	Unified Service Levy
USO	Universal Service Obligation
USOF	Universal Service Obligation Fund
UTL	United Telecom Limited
UTL	United Telecom Ltd.
UTs	Union Territories
VCC	Virtual Calling Cord
VLR	Visitor Location Register
VMS	Voice Mail Service
VNO	Virtual Network Operators
VOIP	Voice-over-IP

VPN	Virtual Private Network
VPT	Village Public Telephone
VRLA	Value Regulated Lead Acid
VSAT	Very Small Aperture Terminal
VTM	Vigilance Telecom Monitoring
WB	Wireless Broadband
WDAN	Wavelength-based Distribution and Aggregation Network System
WiPS	Wireless Phone Secure
WLL	Wireless in Local Loop
WMO	Wireless Monitoring Organisation
WMTDC	Wireless Monitoring and Training Development Centre
WPC	Wireless Planning & Coordination
WPHS	Web Page Hosting Service
WSHS	Web Server Hosting Service
WSIS	World Summit on the Information Society
WTDC	World Telecommunications Development Conference

ORGANIZATION CHART OF DEPARTMENT OF TELECOMMUNICATIONS

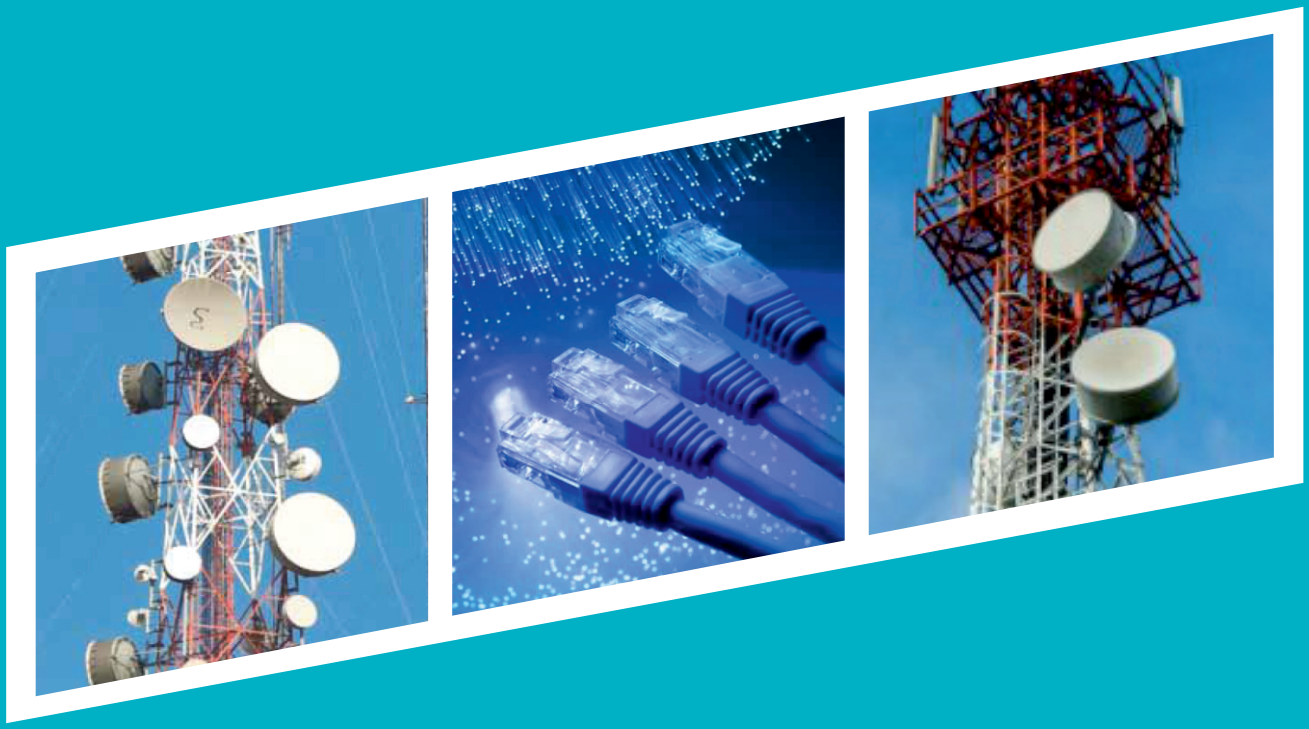


LEGEND
DCC: Digital Communications Commission
DDG: Deputy Director General
WPF: Wireless Planning & Finance
LFP: Licensing Finance Policy
LFA: Licensing Finance Assessment
AM: Asset Management
E&T: Establishment & Training
B&PEF: Budget & Public Enterprise Finance
FIPP: Foreign Investment Policy & Promotion
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. Adv.: Economic Advisor
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



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