

## **CHAPTER-9**

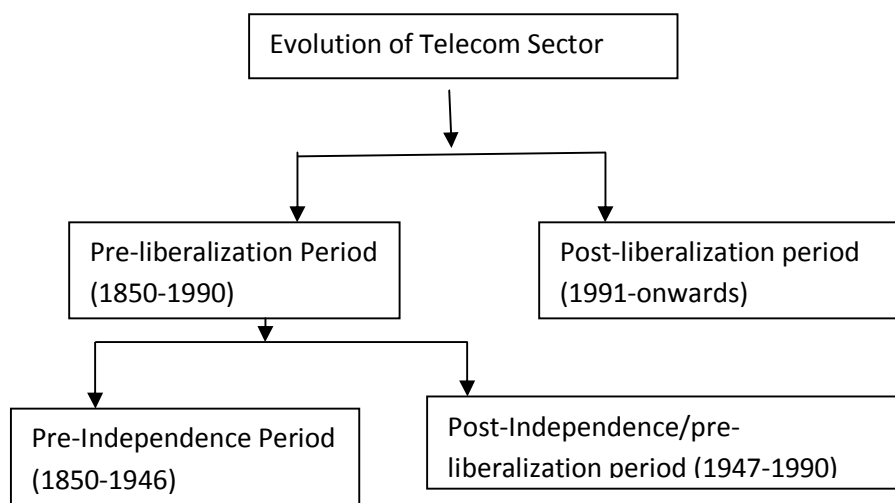
### **TELECOM POLICIES IN INDIA**

The process of privatization and liberalization radically changed the regulatory and institutional mechanisms across the world which equally affected the structure and components of telecom markets in India. Telecom sector has witnessed spectacular shift in regulatory framework as well as fast technological changes all over the world since 1990s which has wide scale ramifications on the economy of the country.

The telecommunication as an enabling infrastructure assumes significant role in development of Indian economy. Accordingly, a comprehensive and suitable framework of telecom policy is vital for the country to grow. “The information and communication industry for exchange of information, data and knowledge is essential for realizing economic, social and cultural benefits. The telecom sector in India has witnessed rapid changes since last decade. There have been far reaching developments in Information Technology (IT), consumer electronics and media industries across the globe” (Soni *et al*: 2003). The Government of India implemented various policy initiatives in different stages to bring the reforms in telecom sector. India has pursued distinct reform policy by taking competitive advantage through privatization as well as achieving universal telecom service across the country (Bhattachararya: 2004). Due to strong public policy, telecommunication industry grew at faster pace in nineties and beyond in comparison to pre-liberalization period (TRAI: 2012). Other important policy initiatives include Broadband Policy 2004, National Telecom Policy 2011 and the recent National Telecom Policy 2012.

#### **Evolution of Telecommunications in India**

The major changes in the policies and issues relating to telecom services in India and the developments in the institutional framework can be analysed as under:



**1. Pre-Independence Period (1850-1946):** Indian telecom network is one of the oldest networks in the world. “Telecom services began in India with the construction of first Experimental Electronic Telegraph Line between Kolkata (earlier called Calcutta) and Diamond Harbour for East India Company in November 1850. In 1881, Oriental Telephone Company Limited of England was given licence to open telephone exchanges in India” ([www.dnb.co.in](http://www.dnb.co.in)). Telecom services were introduced in Mumbai, Kolkata, Chennai (earlier called Madras), Karachi and Ahmadabad (Earnest & Young and FICCI). Further, telephone services were merged with the postal system in 1883. In 1885, Indian Telegraph Act 1885 was enacted which entitled the Government of India to be the sole operator or to give license to operate telecommunication services.

**2. Post-Independence and Pre-liberalization Period (1947-1990):** After independence, Indian government nationalized all the companies into the Posts, Telephone and Telegraph (PTT) department under the Ministry of Communication which later on was renamed as Ministry of Information and Communication Technology (Earnest & Young and FICCI: 2011). “In 1950, there were 196 telephone exchanges in princely states ([www.trai.com](http://www.trai.com)). In November 1960, Subscribers Trunk Dialling (STD) was installed between Kanpur and Lucknow and in 1976 International Subscriber Dialling (ISD) was installed between Bombay and London. Till mid-80s, the telecom sector was entirely under government control. In 1984, for the first time the private sector participation was allowed in telecommunication equipment manufacturing in manufacturing of subscriber

terminal equipment. The government also set-up Center for Development of Telematics (C-DOT) in 1984 to promote the R&D in the telecom sector. The actual evolution of the industry started after the government separated the Department of Post and Telegraph in 1985 by setting up the Department of Posts and the Department of Telecommunications (DoT). With the growing telecom needs, government set up two Public Sector Units namely Mahanagar Telecom Nigam Limited (MTNL) and Videsh Sanchar Nigam Limited (VSNL) in 1986 (TRAI: 2012). The MTNL provided telecom services in Bombay and New Delhi while VSNL provided international telecom services. In 1989, the Telecom Commission was set up with executive, administrative, and financial powers” (Jain: 2001).

“The reason behind the slow growth of the telecom sector during the pre-liberalized period was that telecommunication infrastructure was not considered as a national development priority by the Indian government like other Asian and Latin American countries till eighties. This sector was a complete government monopoly and most importantly lack of investment in telecom infrastructure lead to slower growth of the telecom sector. The highest plan outlay in communication sector was laid out in the Eighth Five Year Plan (1985-1990) i.e., 3.6 per cent, largest in the pre-liberalization period” (TRAI:2012). However, later on government realised that development of adequate telecommunication infrastructure was essential due to growing demand for telecom connections as well as digitization of the economies across the world.

**3. Post-liberalization Period (1991-onwards):** Until 1991, telecommunications sector was under the monopoly of government. The main aim of telecommunications reform was to increase private investment in the sector and to bring policy reforms to ensure transparency which had helped the sector to grow leaps and bounds (Dossani: 2005). Therefore, government largely increased the resource allocation to the communication sector after economic restructuring of the economy in 1991 and onwards. “In 1991, Department of Telecom was restructured to ensure a level playing field among private operators and the incumbent. Department of Telecom Services (DTS) was carved out of the Department of Telecom. DTS was later corporatized and renamed Bharat Sanchar Nigam Limited (BSNL). The main functions of the Department of Telecom (DoT) now include

policy-making, licensing and promotion of private investments in the sector. India allowed private sector participation in telecom services from 1992 onwards. Further boost to privatization of this sector came with National Telecom Policy-1994. For an orderly and healthy growth of the telecommunications sector as well as for the protection of consumer interests, it was felt necessary to separate the regulatory functions of the government from the service providing functions. In 1997, Telecom Regulatory Authority Act was passed by the parliament and TRAI became an independent regulatory authority for the telecom sector. In order to further strengthen the TRAI, government created Telecom Disputes Settlement and Appellate Tribunal (TDSAT) in January 2000 with adjudication and dispute settlement power. The decisions of the Tribunal can only be challenged in the Supreme Court” (Jain: 2001).

India has adopted the basic telecommunications agreement of World Trade Organization (WTO). Before the formation of WTO, the GATS agreement on telecommunication on Feb. 1997 paved the way for opening up of telecommunication services in 72 countries which signed the agreement, India being one of them. Both WTO and ITU have played a big role in the growth of global telecommunication infrastructure and creation of an integrated global telecommunication markets (Lin: 2008). “Agreeing to the WTO and GATS agreement also opened this sector to the Foreign Direct Investment. In order to attract more funds for the provisioning of telecom services, corporatisation and privatization was adopted and the limits of Foreign Direct Investment (FDI) in the sector have been raised from time to time. In budget 2005, limit of FDI has been raised from 49 to 74 percent. Foreign Direct Investment (FDI) has been permitted 100 percent in the telecom manufacturing segment and 74 percent in Basic, Cellular, Unified Access Services, National/ International Long Distance, V-Sat, Public Mobile Radio Trunked Services (PMRTS), Global Mobile Personal Communications Services (GMPCS) and other value added services” (www.dot.gov.in).

#### **National Telecom Policy 1994**

“National Telecom Policy (NTP) 1994 envisaged the opening up of the telecom sector in basic services as well as value added services like Cellular Mobile

Telephone Services (CMTS), radio paging, etc. The policy also allowed the private sector participation in the telecom services except National Long Distance (NLD) and International Long Distance (ILD) services” (TRAI:2012). National Telecom Policy envisioned “availability of telephone on demand, provision of world class services at reasonable prices, improving India's competitiveness in global market and promoting exports, attracting FDI and stimulating domestic investment, ensuring India's emergence as major manufacturing / export base of telecom equipment and universal availability of basic telecom services to all villages.” It also announced a series of specific targets to be achieved by 1997 which are as follows:

### **Targets**

- Telephone should be available on demand by 1997.
- All villages should be covered by 1997.
- In the urban areas a PCO should be provided for every 500 persons by 1997.
- All value-added services available internationally should be introduced in India well within the time span of VIII Plan period, preferably by 1996 (Government of India: 1994).

### **Implementation**

“The teledensity target of the National Telecom Policy (NTP) 1994 was about 0.8 per hundred persons. Targets of NTP-1994 could not be realized in case of rural telephony. Telephone lines in rural areas had not worked properly due to technical reasons and only about half of over 6 lakh villages were covered by March 1999. However, performance of PCOs was comparatively better and the number of PCOs increased from 80,000 in March 1994 to 277,000 in March 1999. STD/ISD PCOs registered significant growth during the period, which increased from 57,119 in March 1994 to 272,989 in March 1999. Through franchise of STD/ISD PCOs self-employment was provided to unemployed youth such as ex-servicemen and lower segments of the society. The mobile and basic segments of the telecom service were opened to the private players during the early nineties through bid pricing for a period of ten years. However, private operators suffered considerable delay for the award of license due to political reasons” (Prasad: 2008). Another hurdle in

achieving the targets of NTP-1994 was that government had not provided financial resources for telecom infrastructure development.

### **National Telecom Policy 1999**

New Telecom Policy 1999 (NTP 99) has been a strategic cornerstone in telecom reforms in India. NTP-99 intended to open up all the segments of the telecom sector for private sector participation. It clearly acknowledged the need for significant improvements and transformations in institutional framework of telecom services so as to separate the licensing and policy functions of the Government from that of being an operator (TRAI:2012).

### **Targets**

- Telephone on demand by the year 2002.
- Teledensity of 7 by the year 2005 and 15 by the year 2010.
- Increase in rural teledensity from the current level of 0.4 to 4 by the year 2010, reliable transmission media in all rural areas.
- Achieve telecom coverage of all villages in the country and provide reliable media to all exchanges by the year 2002.
- Internet access to all district head quarters by the year 2000.
- High speed data and multimedia capability using technologies including ISDN to all towns with a population greater than 2 lakh by the year 2002 (Department of Telecommunication: 1999).

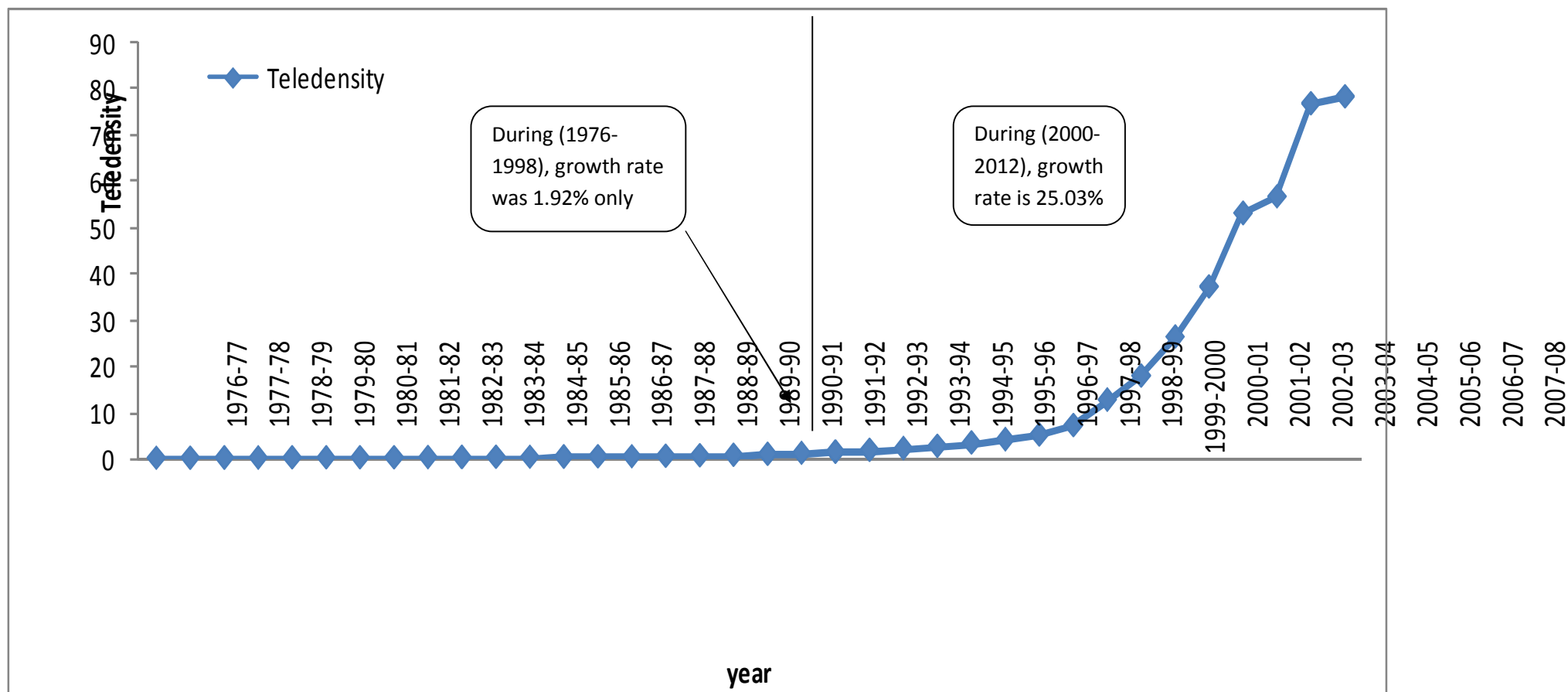
### **Impact of Policy Implementation on Telecom Growth**

An interesting feature of the NTP 1999 was that the growth rate of teledensity during the period (1976-1998) was just 1.92 percent shown in figure 1. However, the figure shows that 1999 onwards teledensity is growing at much faster pace comparatively.

Tariff reduction has led to substantial growth in the wireless subscribers. “The introduction of Telecom Tariff Order in 2000 brought down call charges to 50 percent per minute. In order to encourage competition, many steps were undertaken by the government during the Eleventh Plan period. These include reduction in tariff for national roaming services, abolition of Access Deficit Charges (ADC). Further,

reduction of interconnect usage charges and introduction of Mobile Number Portability encourage competition in the sector. In May 2003, all local incoming calls were made free by introducing the Calling Party Pays (CPP) regime. During the same year, government introduced the Unified Access Service (UAS) licensing regime, which permitted an access service provider to offer both fixed and/or mobile services under the same license, using any technology. In November 2005, new Unified Access Service Licensing (UASL) guidelines were issued. These developments led to substantial increase in the subscriber base and the sharp decline in average tariff which resulted in increase in overall industry revenues.” The positive relationship between the high subscriber base and low average tariff per outgoing call is indicated in Figure 2 (Government of India: 2012-17).

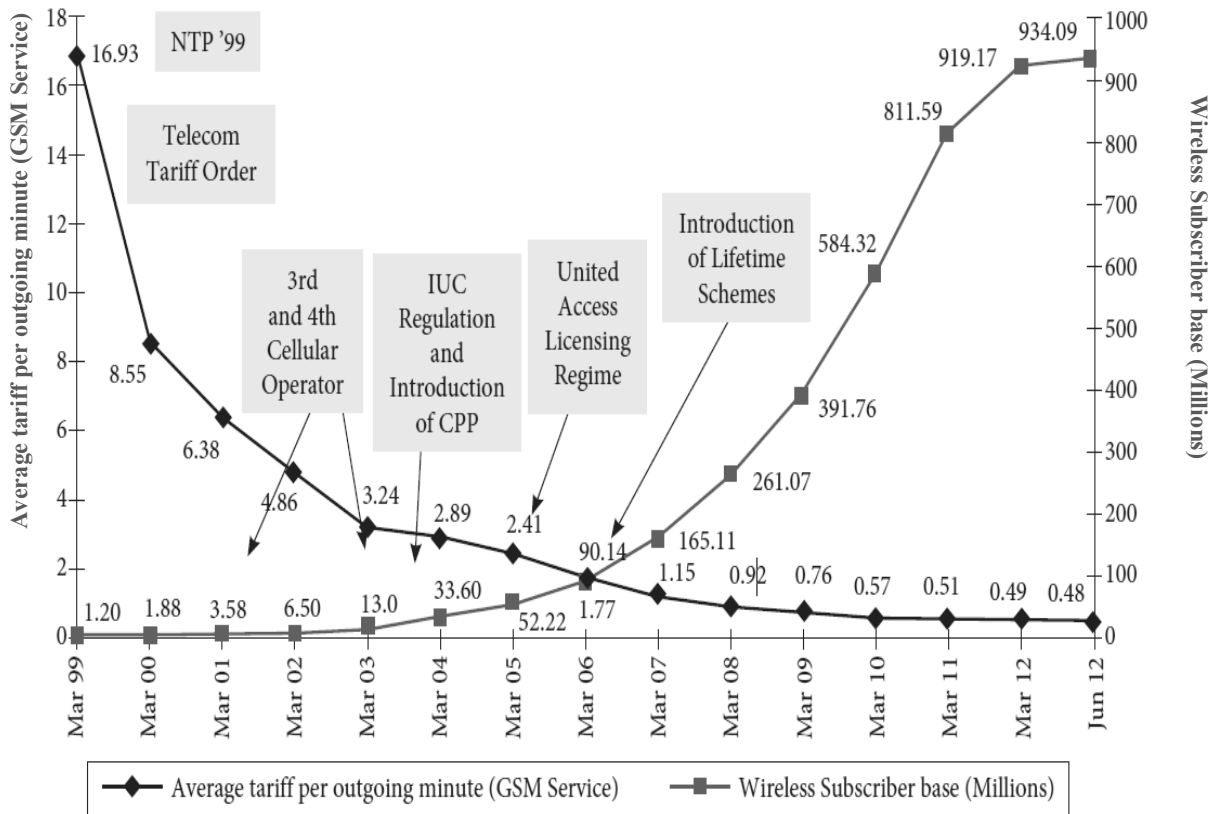
**Figure 9.1: Average Yearly Growth Rates of Teledensity (1976-1998) and (1999-2012)**



Source: CMIE, *Report on Infrastructure*, 2011, Economic Intelligence Bureau, Mumbai.



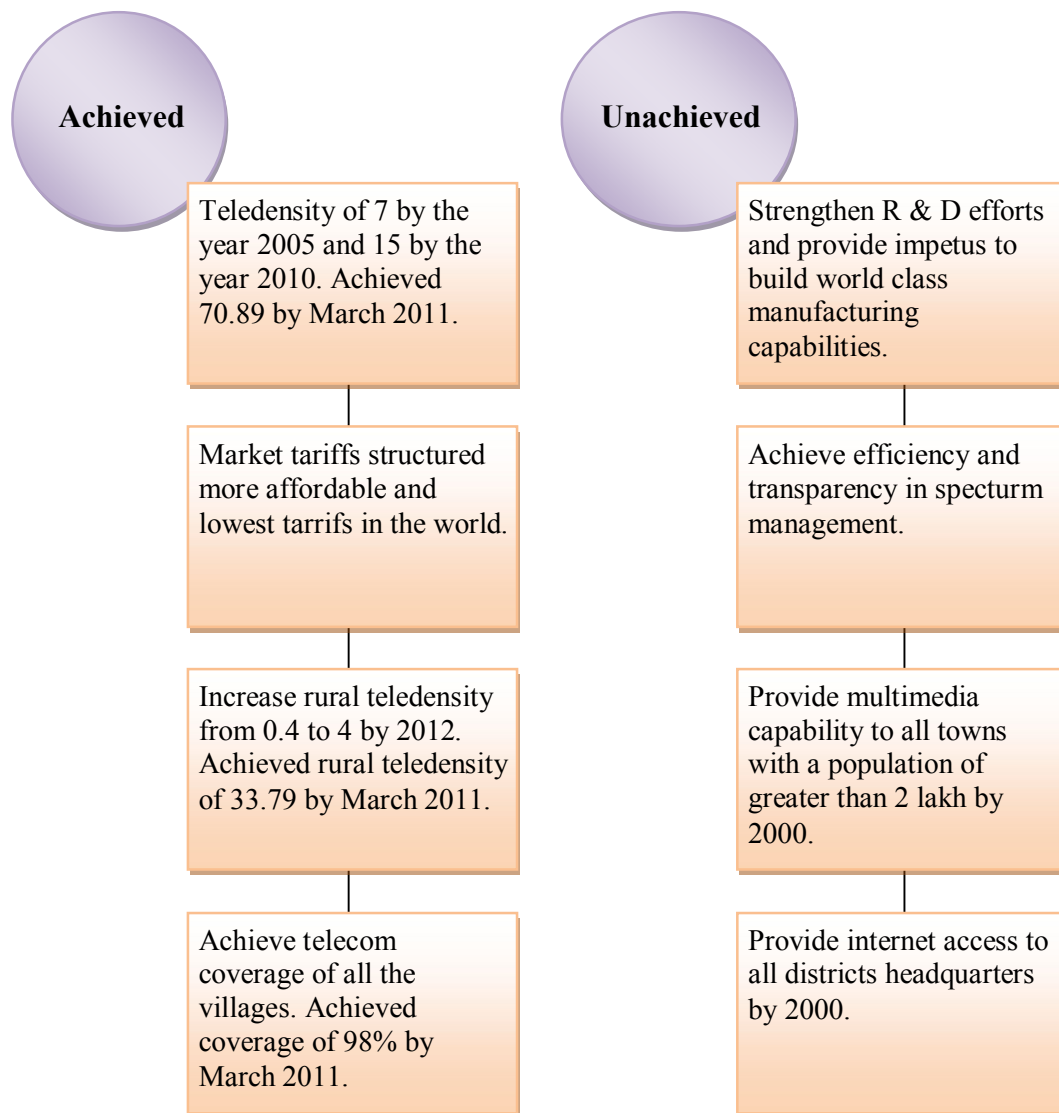
**Figure 9.2: Wireless Subscriber Base (Millions) and Average Tariff Per Outgoing Minute (GSM) in Rs**



Source: Government of India, *12<sup>th</sup> Five Year Plan (2012-17)*, Planning commission, 2012

Although, National Telecom Policy (NTP) 1999 proved successful in fulfilling its objectives to a great extent, but it could not achieve all the targets. There are certain objectives which remained unachieved till now. The chart below shows achieved as well as unachieved objectives of the NTP 1999.

**Figure 9.3: Objectives of National Telecom policy 1999: Achieved and Unachieved**



Source: Confederation of India Industry, *National Telecom Policy 2011: A Pragmatic View of the Road Ahead*, 2012, MIT School of Telecom Management, Pune, India

### **Broadband Policy 2004**

Recognizing the role of broadband services in realizing the social and economic goals, Broadband Policy was laid down by the Government of India in 2004. It envisioned “enhancing the quality of life by implementation of tele-education, tele-medicine, e-governance, entertainment and also to generate employment through high speed access to information and web-based communication. Demand for Broadband is primarily driven by Internet and PC

penetration. The penetration of current level of Internet and Broadband infrastructure is very low in rural and remote areas even in urban areas as compared to many Asian countries. Penetration of Broadband, Internet and Personal Computer (PC) in the country was 0.02 percent, 0.4 percent and 0.8 percent respectively at the end of December, 2003. In order to achieve an accelerated growth in Internet penetration and PC penetration as the success of broadband, government envisions the following framework of the policy.”

**Table 9.1: Targets of Broadband and Internet subscribers**

	Internet subscribers	Broadband subscribers
2005	6 millions	3 millions
2007	18 millions	9 millions
2010	40 millions	20 millions

Source: [www.dot.gov.in](http://www.dot.gov.in)

### **Technology Options for Broadband Services**

“The Broadband Policy 2004 mentioned that technologies like optical fiber, cable TV network, satellite media and Digital Subscriber Lines on copper loop can be used in future for providing internet and broadband services to the citizens. The policy also envisaged that, broadband infrastructures of public sector units i.e., MTNL and BSNL would be utilized to provide broadband services. Further, policy intended that private players will also use the broadband infrastructure of these public sector units for providing internet services. Policy envisaged that for internet services, the cable networks can be used to provide broadband connections because cable networks are accessed by most of the people. The Policy also intended to use Very Small Aperture Terminals (VSAT) and Direct-To-Home (DTH) for increasing broadband penetration as such technologies can be implemented in rural and remote areas” (Government of India: 2004).

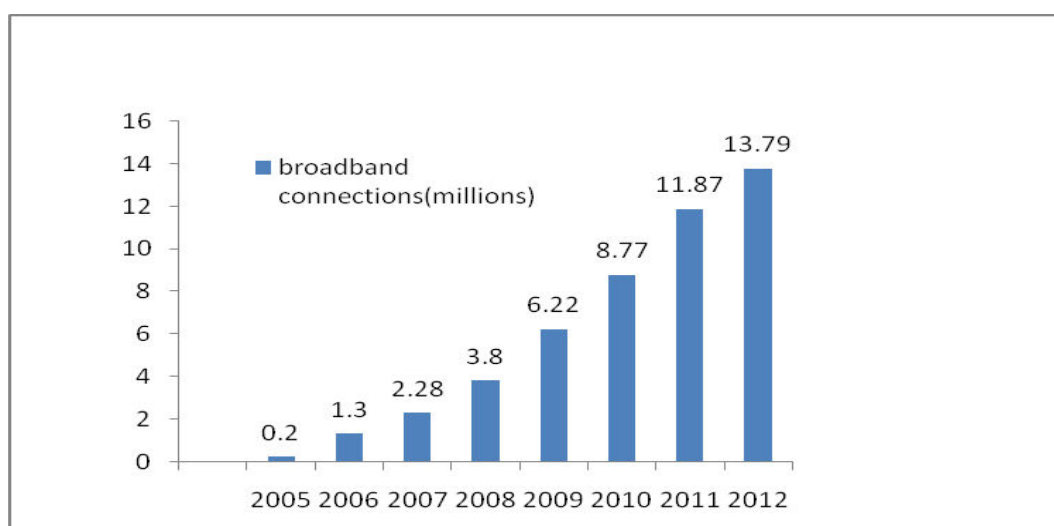
### **Internet connectivity and policy Implementation**

Broadband connectivity has a significant role to play in improving socio-economic performance as broadband services empower the masses. “Broadband connectivity has been provided in 4044 cities, 5431 block headquarters, 613 district headquarters covering about 1,06,559 villages. Further, broadband coverage will get

fillip with the setting up of 100,000 Common Service Centers (CSCs) covering all the villages in the country. They will provide internet access and benefit of e-governance to the common citizen. Internet access is too expensive for the poor in India. Installing the necessary telephone lines needed for internet or email access is equally unaffordable. Economic divide has made particular section of the society unable to have information access as they cannot afford it. Therefore, main cause behind the low internet penetration is affordability issue. Some other challenges before the Government to deploy the broadband infrastructure in rural and far-flung areas include lack of awareness, technical illiteracy, poverty and low network bandwidth issues. The wireless broadband is likely to be the preferred route that many operators adopt in delivering broadband services to the masses as wireless broadband could drive inclusive growth through mobile banking, tele-education, e-governance, tele-medicine etc” (Department of Telecommunication: 2011-12).

The figure 4 below shows that estimated growth of 20 million broadband subscribers till 2010 could not be achieved as number of broadband subscribers could reach only 13.79 millions till 2012

**Figure 9.4: Growth of Broadband Internet Subscribers in India**



Source: Department of Telecommunication, *Annual Report*, various issues, Government of India, New Delhi.

Many initiatives have been taken under Universal Service Obligation Fund for boosting rural broadband penetration. “Under the scheme there is a provision to provide 888832 wireline broadband connections to individual and Government institutions by 2014. As on 30th November 2010, 232852 broadband connections

and 670 kiosks have been provided. Moreover, broadband facility will be provided to the Institutional users such as Gram Panchayats, Higher Secondary School and Public Health Centres. There is a provision of subsidy for the wireless broadband active infrastructure which would provide broadband coverage to about 5 lakh villages. Apart from that, initiatives have been taken to strengthen Optical Fibre Cable network in rural areas to provide sufficient back-haul capacity to integrate voice and data traffic” (Department of Telecommunication: 2011-12).

### **National telecom Policy 2011**

The National Telecom Policy (NTP) 2011 encompasses multiple aspects of communications to enhance efficiency, convenience and access across the length and breadth of the country. The policy envisions providing secure, reliable, affordable and high quality converged telecom services anytime, anywhere to the people of India.

#### **Challenges and Opportunities**

**Telecom as Infrastructure Sector:** NTP 2011 recognizes the need to consider telecom as an infrastructure sector. Infrastructure companies such as power, natural gas, roads, ports etc. enjoy tax holidays under section 80IA of Income tax act, 1961. Since telecom is an essential infrastructure companies building telecom infrastructure should also be given incentives such as, reduction in customs duty on raw material for manufacture of telecom equipment handsets, optical fiber and reduced import duty on non-electronic parts for manufacture of telecom equipment.

**Domestic Equipment Manufacturing:** The arrival of next generation technologies has given a fillip to the demand for telecom equipment as telecom operators are rolling out 3G and broadband wireless access services. Telecom domestic equipment products could not meet the demand of the telecom equipment. Hence, most of the equipment required for expansion of telecom network is imported by telecom operators from countries such as China, Finland, South Korea and the USA. Some other factors which have impeded development of a conducive environment for telecom manufacturing in India include lack of skilled workforce, lack of R&D activities, competition from low-cost Chinese equipment, unfavorable tax and duty structure, non-availability of long term finance and brain drain in India (Confederation of India Industry: 2012). Imports of telecom equipment are far more than exports.

**Broadband Access to Village Panchayats:** “NTP 2011 has a vision of broadband on demand and connecting all the village panchayats with high speed broadband through national broadband network. Government approved a project for National Optical Fiber Network in November, 2011 for providing broadband connectivity to all 2.5 lakh Gram Panchayats. The policy envisions extending the existing optical fiber network up to village Panchayats for providing various services like e-education, e-health, e-entertainment, e-commerce, e- governance etc. to people and businesses” (Government of India: 2011-12).

### **National telecom Policy 2012**

“The Government approved National Telecom Policy-2012 (NTP-2012) on 31<sup>st</sup> May 2012 which addresses the vision, strategic direction and the various medium term and long term issues related to telecom sector. The vision of the policy is to make available the affordable, reliable, secure and effective telecommunication and broadband services for the citizens. Based on these principals, decisions would be taken by maintaining a balance between the interests of users/ consumers, service providers and government revenue” (Government of India: 2012). The main objectives are as follows:

#### **Objectives**

- Provide secure, affordable and high quality telecommunication services to all citizens.
- Increase rural teledensity from the current level of around 39 to 70 by the year 2017 and 100 by the year 2020.
- Provide affordable and reliable broadband-on-demand by the year 2015 and to achieve 175 million broadband connections by the year 2017 and 600 million by the year 2020 at minimum 2 Mbps download speed and making available higher speeds of at least 100 Mbps on demand.
- Provide high speed and high quality broadband access to all village panchayats through a combination of technologies by the year 2014 and progressively to all villages and habitations by 2020.

. (Government of India: 2012)

### **Approach of Five Year Plans for the Development of Communication Sector**

The goal of the government was to boost low teledensity prevailing in the country till the late 1990s. Government was not capable to finance the investment

needed to push the growth of telephones due to 1991 financial crisis in India. Further, it required the import of technologies and telecom equipment. Private sector has performed effectively in the 2000s and has also started investing abroad. Table 2 shows the total outlay on telecommunications. Plan outlay on telecommunications has increased from Rs 47 crore in the First Five Year Plan to Rs 2,58,439 crore in the Eleventh Five Year Plan (EFYP) (2007–12). Share of telecommunications in the total Plan outlay has increased from 2.27 per cent to 7.09 per cent during the same Plan period. The growth rate of the plan outlay on communications shows that the big change came in the Sixth Five Year Plan. Outlay on communication in Eleventh Five Year Plan increased more than two and a half times as compared to the previous Plan (TRAI:2012).

**Table 9.2: Total Plan Outlay and Outlay for Communications in Five Year Plans (Rs crore)**

Five year plan	Communication outlay	Growth rate of communication outlay	%age of communication outlay
First five year	47	-	2.27
Second five year	66	40	1.38
Third five year	164	148	2.19
Fourth five year	415	153	2.61
Fifth five year	781	88	2.01
Sixth five year	2722	249	2.79
Seventh five	8123	198	4.51
Eighth five year	25110	209	5.78
Ninth five year	47280	88	5.50
Tenth five year	98968	109	6.49
Eleventh five	258439	161	7.09

Source: Telecom Regulatory Authority of India, Study paper, “*Telecom sector in India: A decade Profile*”, 2012, New Delhi

### **Twelfth Plan Targets for the Telecommunication Sector**

The telecom sector has registered an annual growth rate of more than 35 per cent during 2008–11. However, the growth has been predominantly impelled through voice based services. Therefore, the twelfth plan should be focused on new technological developments for spreading the usage value added services at affordable rates. The overall teledensity has also reached to 78.66 per cent during the Eleventh Plan period. However, the subscriber base for telecom services in India is

skewed in favour of urban areas. Urban teledensity is around 4.4 times that of rural teledensity.

### **Need for Regulation**

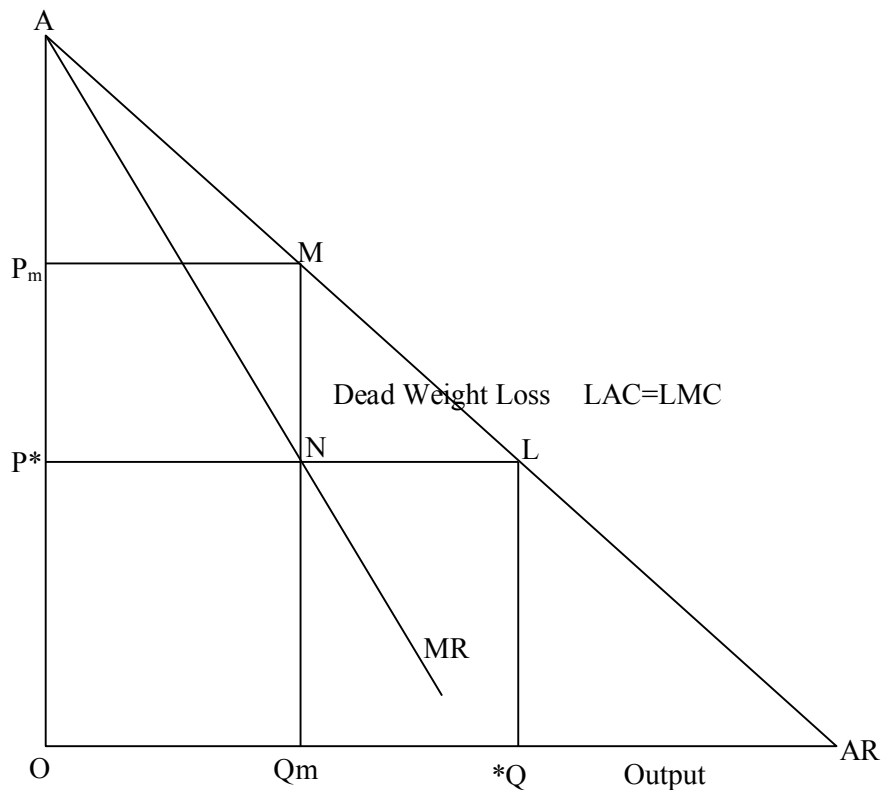
Regulation in telecom market is an issue of great importance, without government regulation strong telecom players may indulge in unfair practices and result in monopoly or control over the various aspects of the market. In fact, the regulatory framework is essential to keep the check on market behaviour regarding pricing, interconnection, service performance and other aspects. The regulation significantly influences the performance and growth of telecom services. Privatization has been preferred by most of the world economies in the telecom sector, but for the purpose of social and economic empowerment of the common people, effective regulation is necessary by the government in order to protect the consumers' interest and promote social welfare. Apart from that, Government regulations ensure the healthy competition in the market. Regulatory and institutional reforms in the telecom sector have resulted in reduction of the cost of transportation, faster information exchange and protection of consumer's interest (Kumar and Jain: 2010)

### **Deadweight Lose Due To Monopoly**

The main objective of the telecom sector reforms and liberalization policies was to break monopoly conditions in the telecom market. For a long time Indian telecom sector was being controlled by the government organizations which lead to formation of state monopolies and hence, inefficiencies and restrictions on the growth of this sector. Economic theory highlights that monopoly causes loss of social welfare and distortion in resource allocation as shown in the following diagram. Under monopoly conditions output is lower and price is high while competition leads to higher output and lower prices. The shaded area in the Figure 5 shows what we call in economics 'Dead Weight Loss' (Dwivedi: 2006)



**Figure 9.5 Deadweight due to monopoly and loss of social welfare**



Lack of effective regulation may result in market failures. The main reason for regulating telecommunication has been that a desirable competitive outcome could not be achieved by market forces only. As Indian telecom sector is witnessing a very fast escalation. With the rapid growth of telecom growth, many legislative, regulatory, environmental and energy related issues are also aggravating in front of policy makers and service providers (Chhaya: 2012). There is a need for transparent legal frameworks that ensure healthy competition in the market. The main objectives of telecom sector regulation are as below:

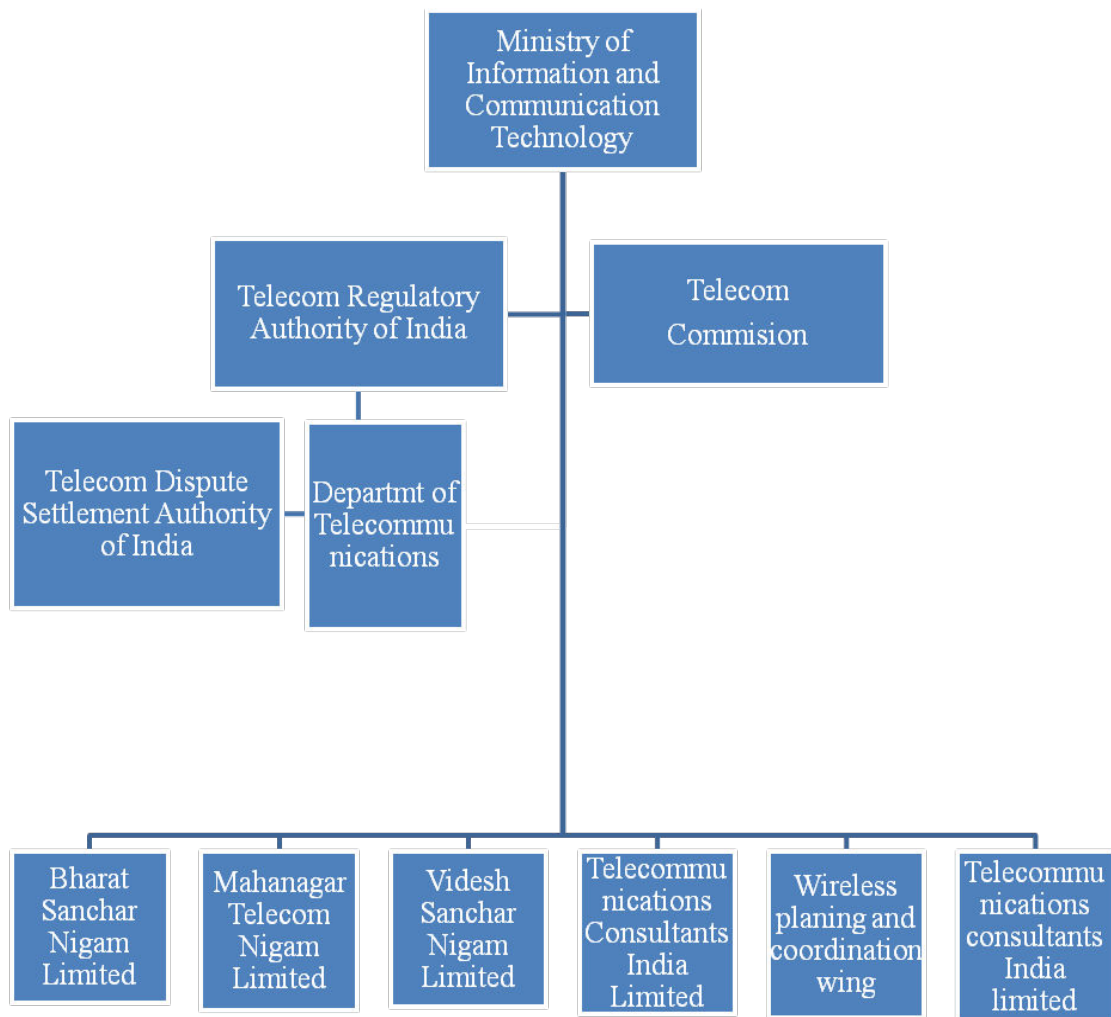
- **Safeguard against anti-competitive conduct:** In case of market based competition, it is crucial to provide a 'level playing field' for public and private operators. "In a market dominated by few players and lack of effective regulation, competition is unlikely to emerge, thus increasing the likelihood of anti- competitive behavior on the part of the dominant players. A regulatory framework and institutional arrangement must be developed to prevent abuse of market power and to promote competition" (Sony. *et al*: 2003). So, it will require more regulatory resources than currently in operation.

- **To achieve Social Objectives:** Some social objectives like Universal service are not achievable through market forces. “The Universal Service Obligation (USO) policy came into effect in 2002 aiming to widen the reach of telephony services in rural and remote areas in India (TRAI: 2012). USOF 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 scope was widened to provide subsidy for enabling access to all types of telecom services including mobile services, Broadband connectivity and creation of infrastructure like OFC (Optical Fibre Cable) in rural and remote areas” (Department of Telecommunication: 2008-09). The Government is taking various initiatives under this scheme for expansion of mobile network in remote and rural areas.
- **Consumer Welfare:** “Consumer welfare intends to provide the service to more and more new consumers by making access easier and to improve the service available to existing consumer. The Regulatory framework is an important means to ensure consumer welfare. The main agenda of the regulatory agency is customer satisfaction and monitoring of performance of operators” (Sony, *et al*: 2003). Interconnection policy is also focused on consumer welfare as interconnection regulations and directions aimed at providing affordable telecommunication services to the consumers. Another policy initiative to improve consumer welfare is to adopt tariff structure suitable to social requirements to ensure that tariff is affordable for all users. TRAI laid down the standards of quality of service to be provided by the service providers and also issued regulations regarding consumer protection (TRAI: 2007).
- **To Manage Scarce Resource:** Spectrum refers to the use of radio waves or frequencies in telecommunications. Since spectrum is the cornerstone of telecom services worldwide and is by its very nature a scarce resource, spectrum management has become very important in recent times” (Desai: 2009). Given that spectrum is a finite resource, the availability of the same would be inversely proportional to the number of operators. Thus, larger the number of service providers smaller will be the amount of spectrum available to each of them. Further the growing usage of spectrum and the resultant

scarcity may lead to re-use of spectrum and increase chances of congestion in networks leading to constraints on service quality. The competition in the industry is expected to intensify further with the entry of new players, both domestic as well as foreign players as new operators might find it difficult to gain significant share in Indian telecom market. Therefore, regulation is required for spectrum allocation to the telecom operators which is currently under government regulation in India (Sinha: 2011).

- **To address issues of safety hazards:** India has around 310000 telecom towers of which about 70 percent are in rural areas. Presently 40 percent power requirements are met by grid electricity and 60 percent by diesel generators. The diesel generators consume about 2 liters of diesel per hour and produce 2.63 kg of CO<sub>2</sub> per liter (TRAI: 2012). Diesel generators are commonly used as alternate power solutions in the telecom sector which is one of the major contributors of Green House Gas (GHG) emissions and emits CO<sub>2</sub>. Reduction of GHG emissions through efficient and sound technologies is necessary for long term sustainable development in the sector. Therefore, regulation is required on such environmental concerns (Panigrahi: 2012).
- **To maintain Interconnection Services:** In a telecom market having many telecom operators, interconnection is an important regulatory issue for telecommunications policy. “For effective competition in the market new entrant must be able to interconnect its network with the facilities of the incumbent operator either directly or indirectly via the network of another competitive entrant. In a competitive telecom market, the core issue is how best to meet the requirements of interconnection of each of the service providers” (Soni *et al*: 2003). The issue of interconnection comes under the supervision of Telecom Regulatory Authority of India. TRAI ensures technical compatibility and effective interconnection between operators and service providers (Prasad: 2008).

**Figure 9.6: Conceptual Framework of Indian Telecom Sector**



**Ministry of Information and Communication technology:**

All the operations of telecom sector come under the control of Ministry of Information and Communication Technology. Major policy decisions relating to the telecommunications are taken by the Ministry of Communications and Information Technology, which operates through two government bodies – the Telecom Commission and the Department of Telecommunications (DoT). “The ministry formulates policies with respect to telecom, post, telegraph and other means of communication. The important regulatory laws governing the telecom sector include the Indian Telegraph Act, 1885; the Indian Wireless Telegraphy Act, 1933; and the Telecom Regulatory Authority of India Act, 1997” (Earnest & Young and FICCI:2011).

## **Department of Telecommunications (DoT)**

“The Department of Telecommunications (DoT) make and monitor the policies relating to telecom sector and also review the performance of policies. It also plays significant role in grant of licences to operators for providing basic and value added services across the country. The decisions relating to spectrum allocation are also taken by the department. It is also responsible for enforcing wireless regulatory measures and monitoring the wireless transmission of all users in the country. The government has created the corporate agencies to facilitate public borrowings and bring some flexibility in decision making. However, policy formulation, regulation, and several key decision areas remained with the DoT” (Department of Telecommunication: 2007-08).

DoT has four Public sector undertakings/corporations under its administrative control. These are:-

- a) Mahanagar Telephone Nigam Limited (MTNL)
  - b) Bharat Sanchar Nigam Limited (BSNL)
  - c) ITI Limited
  - d) Telecommunications Consultants India Limited (TCIL)
- a) MTNL was set up in 1986 as a Public Sector Unit, and provides telecommunication facilities in India's two metro cities - Delhi and Mumbai. “MTNL was given navaratna status in 1997. It is providing a host of services like call waiting, call forwarding, wake up calls, absent subscriber service, caller identification, friend& family, voice mail etc. It launched 3G services in 2008. MTNL achieved a customer base of INR 41.51 million at the end of December 2012. MTNL has provided access to 3G services to all its GSM mobile subscribers. MTNL has 1.1 million subscriber base in providing internet services as on December 2012 and is providing three type of internet services i.e. voice, high speed internet and IPTV on its broadband network. The Government of India currently holds 56.25 percent stake in the company. The Company has been facing serious competition amidst mounting staff costs and has been incurring losses. The losses which were Rs. 2611 crore in the year 2009-10 increased to Rs.4110 crore in the year 2011-12.”(Department of Telecommunication: 2012-13).

- b) BSNL was established in October, 2000 with an objective of providing a host of telecom services in India i.e., Wireline, CDMA wireless, GSM wireless, Internet, Broadband, Courier Services etc. “BSNL telecom services cover all the district headquarters, Tehsil headquarters and almost all block headquarters. BSNL has 24.58 million wireline subscribers i.e., 71.93 percent share of wireline subscriber base in 2012. Currently, BSNL has 43.74 million line basic telephone capacity, 8.83 million WLL capacity, 72.60 million GSM capacity, 37,885 fixed exchanges and 12071 towers. BSNL has covered 577516 villages as per census 2001 with VPT facility in the country out of 593601 inhabited villages up to December 2012. BSNL also lays special emphasis on development of telecommunication facilities in North Eastern Region and in Tribal areas. BSNL had introduced broadband services from January 2005 and had 9.97 million subscriber base in providing internet services as on 2012. The Company incurred a loss of Rs. 13465 crore in the year 2011-12” (Department of Telecommunication: 2012-13).
- c) Indian Telephone Industries limited (ITI) was established in 1948 in order to provide telecom manufacturing facilities spread across six locations and a countrywide network of marketing/service outlets. The company provides a wide range of telecom products and total solutions covering Switching, Transmission, Access and Subscriber Premises equipment. ITI has also been giving solutions especially for secured network to Indian Army. The Company incurred a loss of Rs. 459 crore in the year 2009-10 which declined to Rs. 370 crore during the year 2011-12.
- d) Telecommunications Consultants India Limited (TCIL) was set up in 1978 which aims at working on technological developments and advancements in all fields of telecommunications and information technology. “It also aims at developing proper marketing strategies to excel in its operations in overseas and in domestic markets, and to acquire state-of-the-art technology on a continuing basis and maintain leadership. TCIL is a 100 percent Government of India owned Schedule-A Miniratna PSU. The Company earned profit of Rs. 8.03 crore during the year 2011-12 on a turnover of 680.79 crore during the same period” ([www.dot.gov.in](http://www.dot.gov.in)).

### **Telecom Regulatory Authority of India (TRAI)**

“For realizing the objectives of NTP-1994, privatization in the telecom sector was allowed which results in multi-operator environment in telecom market in all the telecom services. The competition between the PSUs and private operators emerged and private players had the advantage of more efficient and effective telecom services due to corporate efficiency and huge financial resources. In order to ensure healthy competition and sustainable growth of the telecommunications, regulatory functions were separated from the service providing functions. The Telecom Regulatory Authority of India (TRAI) was established in 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act, 1997”(Department of Telecommunication:2011-12). “Further, in 2000, amendment was made to the act of TRAI whereby recommendatory and regulatory functions of the TRAI were separated. TRAI can make recommendations but these recommendations are not binding on the government. This independent body was established with an objective to encourage competition and promote and protect consumer interests. The main functions of the TRAI include ensuring technical compatibility and effective interconnection between operators and service providers, regulating revenue-sharing agreements among service providers. Besides, among other functions, TRAI is authorized to monitor standards of quality-of-service, approve tariff rates for telecom services and protect consumers’ interests. However, TRAI is not authorized to act relating to licensing, standard setting and allocating spectrum, which comes under Department of Telecom” (Prasad: 2008).

It can be observed that most of the important functions such as the formulation of policies, spectrum allocation, licensing and final decision making relating to any issue come under the domain of government, the role of TRAI is merely recommendatory. The mandatory powers of TRAI are restricted to a number of technical issues such as fixing the terms and conditions of inter-connectivity between the service providers, laying down the standards of quality of service etc. (Mani: 2008)

### **Telecom Disputes Settlement and Appellate Tribunal (TDSAT)**

“The TDSAT was set up in 2000 by the Government under the TRAI Act, 1997 for the purpose of dispute settlement relating to licensing issue. The dispute involving licensor and licensee or between service providers comes under the

domain of TDSAT. Further, this body also settle dispute between a group of consumers and service providers. Since, 2004 broadcasting and cable services besides telecommunication services also comes under the jurisdiction of TDSAT. The jurisdiction of TDSAT is exclusive and its orders can only be challenged in Supreme Court of India on points of law only. TDSAT comprises of a Chairperson and two Members. The Chairperson is a retired Judge of the Supreme Court of India while two Members are experts in the field of administration/telecommunications” (Gupta and Thakur: 2012).

### **Wireless Planning and Co-ordination Wing (WPC)**

The Wireless Planning and Co-ordination (WPC) was set up in 1992 as a wing of the Department of Telecommunication which is responsible for Frequency Spectrum Management, including licensing of wireless stations and caters to the needs of all wireless users (Government and Private) in India. “It exercises the statutory functions of the Central Government and issues licenses to establish, maintain and operate wireless stations. WPC is divided into (i) Licensing and Regulation (LR), (ii) New Technology Group (NTG) and (iii) Standing Advisory Committee on Radio Frequency Allocation (SACFA). The WPC also represent India at the International Telecommunication Union (ITU), Asia-Pacific Telecommunity (APT) and other organizations where India is signatory” (Nitish Desai: 2009).

Apart from the role of various regulatory bodies in telecommunication sector reforms, significant measures were taken up from time to time in different telecom policies which are discussed below:

### **National Long Distance**

“The New Telecom Policy 1999 envisaged the opening up of the National long distance service beyond the service area to the private operators. National Long Distance (NLD) Service was opened to the private sector with effect from 13 August, 2000. Indian registered companies having a net worth of Rs 2.5 crore and paid up equity of Rs. 2.5 crore are eligible to apply. The total foreign equity in the applicant company must not exceed 74 percent at any time during the entire license period. Investment in the equity of the applicant company by an NRI/International funding agency is counted towards its foreign equity. The entry fee of Rs. 2.5 crore



is to be submitted before signing the license agreement. There is no restriction on number of operators. A National Long Distance operator can carry inter-circle traffic in the country. The license for National Long Distance operator is issued on non-exclusive basis, for a period of 20 years and is extendable by 10 years at one time. In addition to Bharat Sanchar Nigam Ltd. (BSNL), 32 more companies have signed license agreement for National Long Distance Service as on Dec. 2012. The competition has resulted in lowering of tariff” (Department of Telecommunication: 2012-13).

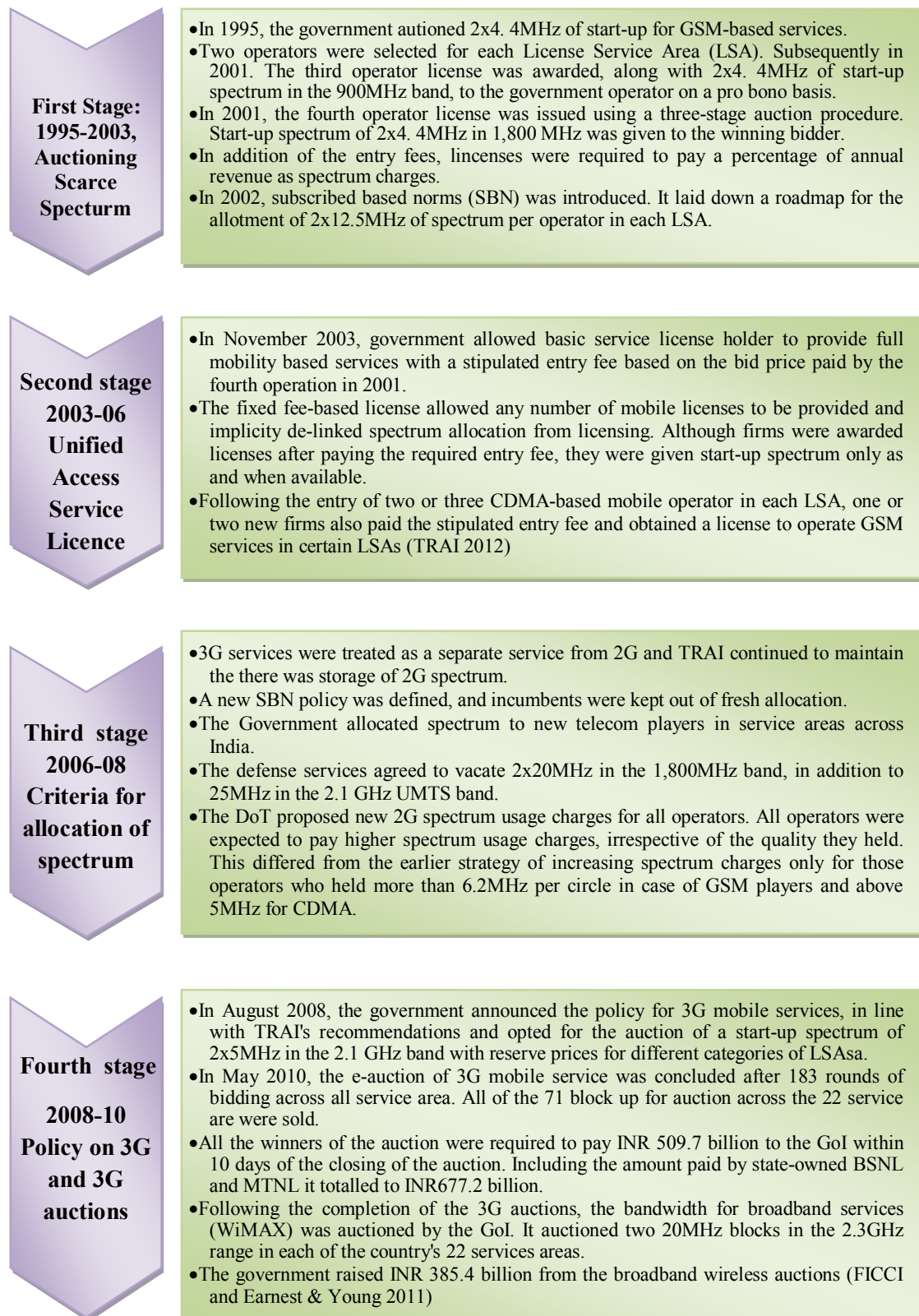
### **Universal Service Obligation Fund**

The Universal Service Obligation (USO) policy was formulated in 2002 with an objective of providing telephone services in rural and far flung areas. Government has started several schemes under USOF (TRAI: 2012). “USOF provide subsidy support for setting up and managing 7,353 infrastructure sites/towers for provision of mobile services in the specified rural and remote areas, where there was no existing fixed wireless or mobile coverage in 500 districts spread over 27 states. Villages or cluster of villages having population of 2000 or more and not having mobile coverage were taken into consideration for installation of the tower under this scheme. As on Dec. 2012, 7,310 towers i.e. about 99.42% have been set up under this scheme. Apart from that as on Dec. 2012, 5, 81,602 villages i.e. 97.97% villages have been covered with Village Public Telephones (VPTs). VPTs are likely to be provided in remaining inhabited revenue villages by March 2013 through on-going USOF scheme of VPTs in newly identified uncovered villages as per Census 2001. For providing broadband connectivity to rural & remote areas, USOF has signed an Agreement with BSNL on January 20, 2009 under the Rural Wireline Broadband Scheme to provide wireline broadband connectivity to rural & remote areas by leveraging the existing rural exchanges infrastructure and copper wire-line network Under this scheme, BSNL will provide 8,88,832 wire-line broadband connections to individual users and Government Institutions and will set up 28,672 Kiosks over a period of 5-years, i.e. by 2014. A total of 4, 33,018 broadband connections have been provided and 10,713 kiosks have been set up in rural and remote areas as on Dec.2012” (Government of India: 2012-13).

## **Spectrum Allocation**

Spectrum is a scarce natural resource which plays a critical role in the provision of mobile telecom services. “In India, the National Frequency Allocation Plan (NFAP) is the basis for spectrum utilization and development and the manufacturing of wireless equipment. With the rising demand for smart phones and usage of large number of applications on these phones, requirements for spectrum has increased but spectrum has to be allocated efficiently by the government for catering the needs of telecom service providers” (Earnest & Young and FICCI: 2011). The policy makers caught in trouble relating to allocation of spectrum to the service providers in 2008 due to lack of transparency and appropriateness in frequency distribution. Spectrum was allocated based on the policy framework of the First Come First Served (FCFS) in 2008. Due to inappropriateness in the policy implementation and thereby loss of huge revenue to the government, executives face legal challenge, and subsequently, in 2012, 122 licenses were canceled by the Supreme Court and the court directed for auction of spectrum. This is being done. With the completion of the auction in the later months of 2012 it is hoped that there will be a revival of investment in this sector (Government of India: 2012-17).

**Figure 9.7: Stages of Spectrum Management and Allocation In India**



The Figure 7 shows the series of developments through various stages that took place in management and allocation of spectrum in India.

### **Mobile Number Portability (MNP)**

“Mobile Number Portability (MNP) allows any subscriber to change his service provider without changing his mobile phone number. The Government has announced the guidelines for Mobile Number Portability (MNP) Service License in the country on 1st August 2008 and has issued a separate License for MNP service with effect from 20.03.2009. Implementation of MNP has given wider choices to the Indian subscribers. It has also induced service providers to offer innovative, affordable and competitive traffic plans for the benefit of the consumers” (Department of Telecommunication: 2011-12)

### **Conclusion**

Before liberalization, when the telecom sector was under government monopoly, the sector was characterized by the low teledensity, rising list of waiting lines, poor service quality, high tariff rates, and a low level of customer satisfaction. However, NTP 1999 has brought significant improvements in the growth of telecom sector in India with its liberal policy framework. Private sector players have played major role in driving the growth of telecom sector, especially wireless and value added services. After that, increasing the cap of FDI from 49 percent to 75 percent in the telecom sector was also a big achievement in terms of increase in FDI in the sector which sparked phenomenal growth in wire line and wireless telephones. The quality and transparency of regulation remain key factors in attracting investments. Reforms have also allowed the telecom sector to address a wide range of issues, including quality of service, protection of consumer interest, and the growth of telecom services in rural areas.