

# Telecommunication Sector in India – An Analysis

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## ABSTRACT

Telecom in the real sense means the transfer of information between two distant points in space. The popular meaning of telecom always involves electrical signals and as a result, people often exclude postal or any other raw telecommunication methods from its meaning. Therefore, the history of Indian telecom can be started with the introduction of telegraph. The government of India possesses a diversified communications system that links all parts of the country by Internet, telephone, telegraph, radio, and television. Most of the telecommunication forms are as prevalent or as advanced as those in modern Western countries, and the system includes some of the most sophisticated technology in the world and constitutes a foundation for further development of a modern network. India has the world's second largest mobile phone users with over 903 million as of January 2012. It has the world's third largest Internet users with over 121 million as of December 2011. India has become the world's most competitive and one of the fastest growing telecom markets. The industry is expected to reach a size of ₹344,921 crore (US\$ 68.81 billion) by 2012 at a growth rate of over 26 per cent, and generate employment opportunities for about 10 million people during the same period. According to analysts, the sector would create direct employment for 2.8 million people and for 7 million indirectly. The total revenue of the Indian telecom sector grew by 7% to ₹283,207 crore (US\$ 56.5 billion) for 2010-11 financial year, while revenues from telecom equipment segment stood at ₹117,039 crore (US\$ 23.35 billion). This paper confines the structure of telecom industry, telecom policies of the government of India, telecommunication services in rural India and growth of telecom industry in India.

## Keywords

Telecom Industry, Telecom Policies, Telecommunication Services, Government Policies and Growth of Telecom Industry:

## 1. INTRODUCTION

India's has 21.59 million-line telephone network and is the largest in Asia, 3rd largest among emerging economies (after China and Republic of Korea) and the 12th largest in the world. India's telecom network comprises of 27,753 telephone exchanges, with a total equipped capacity of 272.17 Lakh lines and 226.3 Lakh working telephones. The Long Distance Transmission Network has nearly 1, 70,000 route kilometers of terrestrial Microwave Radio Relay & Co-axial cables and about 171,000 route kilometers of Optical Fiber Cables. Fully automatic International Subscriber Dialing (ISD) service is available to almost all the countries. The total number of stations connected to National Subscriber Dialing (NSD) is over 18,000 and this is increasing fast. Yet the present tele-density is very low at about 2.2 per hundred persons, offering a vast scope for growth. In the field of International

communications, tremendous progress was made by the use of Satellite Communication and submarine links. It is therefore not surprising that India has one of the fastest growing telecommunication systems in the world with system size (total connections) growing at an average of more than 20 percent over the last 4 years.

## 2. THE TELECOM INDUSTRY IN INDIA

The Indian telecom industry has undergone significant structural transformation since its liberalization in the 1990's. During the last decade, the Indian telecom industry has evolved into a multi-segment, competitive market from a small supplier-dominated market having public sector monopoly. Coherent Government policies have played a crucial role in shaping the structure of the Indian telecom sector. Before liberalization, the public sector held a monopoly in provision of telecom services. The entire telecom services operation in the country was carried out by the Department of Telecommunication (DoT), a public sector entity established in 1985. It managed the planning, engineering, installation, maintenance, management, and operations of telecom services for the whole of India. In order to ease out its operations, two new public sector corporations viz. MTNL and VSNL were set up under the DoT in 1986. Thus, before the entry of the private players, the telecom services were provided by three public entities viz. DoT, MTNL and VSNL. While MTNL primarily looked after the operation of basic telephony services in Delhi and Mumbai, VSNL provided international telecom services in India. DoT looked after basic telephony operations in regions other than Delhi and Mumbai. Prior to liberalization the telecom services were broadly classified as domestic basic (which included basic telephony, telex and fax), domestic value-added services (VAS) which covered all other services such as paging, cellular, data services, VSAT and international basic and VAS.

Liberalization process in the telecom services market began in 1992, with the unbundling of the domestic basic services and the domestic VAS and entry of private players for providing the VAS such as cellular and paging services. During this period, the government provided licenses to private players according to the services that were to be provided in the specified areas of service provision. The country was divided into circles (or categories) on the basis of economic potential. Thus, primarily these divisions were mostly adjoining the states of India. Such demarcations were primarily responsible for existence of various regional players in provision of telecom services. During 1994, through a competitive bidding process, licenses were granted to 8 CMTS operators in four metros, 14 CMTS operators in 18 state circles, paging operators in 27 cities and 18 state circles.

After the domestic VAS, the basic services were opened up to private players. The National Telecom Policy (NTP) 1994,

which endeavoured to build world-class telephone services in India and aimed at providing telephones on demand, enabled the entry of private players in the provision of basic services. The need for independent regulation had risen with the entry of private players. Also, to fulfill the commitments made when India joined the World Trade Organization (WTO) in 1995, the Telecom Regulatory Authority of India (TRAI) was established in 1997<sup>1</sup> to regulate telecom services including fixation/revision of tariffs. The establishment of TRAI was a positive step in terms of separation of regulations from policy making and operations, which continued to be under the purview of the DoT. Further, in 1998, the Government also declared the policy for Internet Service Provision (ISP) by private operators and had even begun licensing of the same around that time. Subsequently the Global Mobile Personal Communications by Satellite (GMPCS) was also opened up for the private players.

Although the private players had been allowed to participate in many telecom services segments, the results of privatization had not been satisfactory entirely. Thus, a New Telecom Policy (NTP-99) was announced on March 26, 1999, which came into effect from April 1, 1999. The NTP 1999 not only provided a major fillip to private sector participation in this industry but also laid down the path for significant development of the Indian telecom industry. The NTP 1999 allowed private operators providing cellular and basic service to migrate from a fixed licence fee regime to a revenue sharing regime to make the operations of the private players financially viable. This policy change provided the much needed relief to private players who were earlier burdened with huge debts that they had to service owing to their licence fee commitments.

The NTP 99 had also enunciated to separate the policy and licensing functions of the DoT from the service providing functions to ensure a level-playing-field among private operators and incumbents. Accordingly, as a predecessor to corporatization, two new departments viz. Department of Telecom Services (DTS) and the Department of Telecom Operations, were carved out of DoT, to separate the service provision and operational functions of DoT. Later in 2000, DTS was corporatized and renamed as Bharat Sanchar Nigam Ltd (BSNL), and thus the functions of the incumbent service provider were separated from that of the policy maker. DoT is now responsible for policy-making, licensing and promoting private investments in both telecom equipment manufacturing and in telecom services. Subsequently in 2002, even VSNL was privatized and its monopoly in ILD services was terminated (from March 31, 2002).

### 3. METHODOLOGY

The study is largely based on secondary data obtained through scanning of available literature on the subject from various libraries and institutes. Various magazines, newspapers, journals etc. were consulted; interviews and group discussions with knowledgeable people in this field are collected. The relevant data from various sources has been collected and the updated report has been compiled.

### 4. OBJECTIVES

- To analyze the structure of Telecommunication industry in India.
- To review the Government Telecom policies in the Telecom sector.

- To know the revenue and growth of Telecom industry in Indian economy
- To know the Telecom services in rural India.

## 5. HIGHLIGHTS OF TELECOMMUNICATION SECTOR IN INDIA

- Pre-1902 – Cable telegraph.
- 1902 - First wireless telegraph station established between Sagar Islands and Sand heads...
- 1907 - First Central Battery of telephones introduced in Kanpur..
- 1913-1914 - First Automatic Exchange installed in Shimla..
- 1927 - Radio-telegraph system between the UK and India, with Imperial Wireless Chain beam stations at Khadki and Daund. Inaugurated by Lord Irwin on 23 July by exchanging greetings with King George V.
- 1933 – Radio telephone system inaugurated between the UK and India.
- 1953 - 12 channel carrier system introduced.
- 1960 - First Subscriber Trunk Dialing route commissioned between Lucknow and Kanpur.
- 1975 - First PCM system commissioned between Mumbai City and Andheri telephone exchanges.
- 1976 - First digital microwave junction.
- 1979 - First optical fiber system for local junction commissioned at Pune.
- 1980 - First Satellite Earth Station for domestic communications established at Sikandarabad, U.P.
- 1983 - First analog Stored Program Control exchange for trunk lines commissioned at Mumbai.
- 1984 – C-DOT established for indigenous development and production of digital exchanges.
- 1995 - First mobile telephone service started on non-commercial basis on 15 August 1995 in Delhi.
- 1995 - Internet Introduced in India starting with Mumbai, Delhi, Calcutta, Chennai and Pune on 15 August 1995

## 6. MODERN POLICIES

- All villages shall receive telecom facilities by the end of 2012.
- A Communication Convergence Bill introduced in the Parliament on August 31, 2001 is presently before the Standing Committee of Parliament on Telecom and IT.
- National Long Distance Service (NLD) is opened for unrestricted entry.
- The International Long Distance Services (ILDS) have been opened to competition.

- The basic services are open to competition.
- In addition to the existing three, a fourth cellular operator, one each in four metros and thirteen circles, has been permitted. Cellular operators have been permitted to provide all types of mobile services including voice and non-voice messages, data services and PCOs utilizing any type of network equipment, including circuit and/or package switches that meet certain required standards.
- Policies allowing private participation have been announced as per the New Telecom Policy (NTP), 1999 in several new services, which include Global Mobile Personal Communication by Satellite (GMPCS) Service, digital Public Mobile Radio Trunked Service (PMRTS) and Voice Mail/Audiotex/ Unified Messaging Services.
- Wireless Local Loop (WLL) has been introduced to provide telephone connections in urban, semi-urban and rural areas promptly.
- Two telecom PSUs, VSNL and HTL have been disinvested.
- Steps are being taken to fulfill Universal Service Obligation (USO), funding, and administration.
- A decision to permit Community Phone Service has been announced.
- Multiple Fixed Service Providers (FSPs) licensing guidelines were announced.
- Internet Service Providers (ISPs) have been allowed to set up International Internet Gateways, both Satellite and Landing stations for submarine optical fiber cables.
- Two categories of infrastructure providers have been allowed to provide end-to-end bandwidth and dark fiber, right of way, towers, duct space etc.
- Guidelines have been issued by the Government to open up Internet telephony (IP).

## 7. REVENUE AND GROWTH OF TELECOM INDUSTRY:

The total revenue in the telecom service sector was ₹86,720 crore (US\$ 17.3 billion) in 2005-06 as against ₹71,674 crore (US\$ 14.3 billion) in 2004-2005, registering a growth of 21%. Estimated revenue of FY'2011 is Rs.835 crore (US\$ 19 Bn Approx). The total investment in the telecom services sector reached ₹200,660 crore (US\$ 40 billion) in 2005-06, up from ₹178,831 crore (US\$ 35.7 billion) in the previous fiscal. Telecommunication is the lifeline of the rapidly growing Information Technology industry. Internet subscriber base has risen to more than a 121 million in 2011. Out of this 11.47 million were broadband connections. More than a billion people use the Internet globally. Under the Bharat Nirman Programme, the Government of India will ensure that 66,822 revenue villages in the country, which have not yet been provided with a Village Public Telephone (VPT), will be connected. However doubts have been raised about what it would mean for the poor in the country. It is difficult to ascertain fully the employment potential of the telecom sector but the enormity of the opportunities can be gauged from the

fact that there were 3.7 million Public Call Offices in December 2005 up from 2.3 million in December 2004.

The Total Revenue of Indian Telecom Services Company is likely to exceed Rs 200000 Cr (US\$ 44 Bn approx) for FY 11-12 based on FY 10-11 nos and latest quarterly results. These are consolidated nos including foreign operation of Bharti Airtel. The major contributions to this revenue are as follows: Bharti Airtel 65,060 Reliance Comm 31,468 Idea Cellular 16,936 Tata Comm 11,931 MTNL 4,380 TTML 2,248 BSNL 32,045 Voda 18,376 TataTeleservice 9,200 Airtel 7,968 SSSL 600 Uninor 660 Loop 560 Stel 60 HFCL 204 Videocon Telecom 254 DB Etisalat/ Allianz 47 Grand Total Rs 201,997 Crs contributed by Sanjay Banka, FCA.

## 8. TELEPHONES COMMUNICATIONS IN INDIA

Communications in India	
Television broadcast stations (2009)	1,400
Radio broadcast stations (1997)	800
Fixed lines (2011)	33.19 million
Mobile phones (2011)	881.40 million
Internet access	
Percent household access (total), 2011	8.5% of households (121 million)
Percent broadband household access	1.0% of households (13 million)
Internet Service Providers (2010)	180
Country code top-level domain	in <a href="http://en.wikipedia.org/wiki/in">http://en.wikipedia.org/wiki/in</a>

The primary regulator of telecommunications in India is the Telecom Regulatory Authority of India (TRAI). It closely regulates all of the industries mentioned below with the exception of newspapers and the Internet service provider industry. The telecommunications industry in India is dominated by private-sector and two state-run businesses. Most companies were formed by a recent revolution and restructuring launched within a decade, directed by Ministry of Communications and IT, Department of Telecommunications and Ministry of Finance. Since then, most companies gained 2G, 3G and 4G licenses and engaged fixed-line, mobile and internet business in India. On landlines, intra-circle calls are considered local calls while inter-circle are considered long distance calls. Foreign Direct Investment policy is increased the foreign ownership cap from 49% to 74%. Currently Government is working to integrate the whole country in one telecom circle. For long distance calls, the area code prefixed with a zero is dialed first which is then followed by the number (i.e. to call Delhi, 011 would be dialed first followed by the phone number). For international calls, "00" must be dialed first followed by the country code, area code, and local phone number. The country code for India is 91.

Several international fiber-optic links include those to Japan, South Korea, Hong Kong, Russia, and Germany. Some major telecom operators in India include Airtel, Vodafone, Idea, Aircel, BSNL, MTNL, Reliance Communications, TATA Teleservices, Infotel, MTS, Uninor, TATA DOCOMO, Videocon, Augere, and Tikona Digital.

- Telephone Subscribers (Wireless and Landline): 914.59 million (October 2011)
- Land Lines: 33.19 million (October 2011)
- Cell phones: 881.40 million (October 2011)
- Monthly Cell phone Addition: 7.79 million (October 2011)
- Teledensity: 76.03 % (October 2011)
- Projected Teledensity: 1 billion, 84% of population by 2012.

Services offered are telephone services, NSD/ISD Services, computerized trunk services, pay phones, National and International leased lines circuits, telex, telegraph services, satellite-based remote area business message network, electronic mail, voice mail, audio-text, radio paging, cellular mobile telephone, internet and video conferencing.

## **9. TELECOM SERVICES IN RURAL INDIA**

The Government has taken various measures to provide telecom facilities in rural areas of the country. As a result, the rural tele density has become 21.19% as on December, 2009 against the target of 4% teledensity in rural areas by 2010. To spread the reach of telecom connectivity, more than 5.6 lakh villages have been provided with Village Public Telephones (VPTs) in the country covering more than 95% of the villages.

Telecom Regulatory Authority of India (TRAI) was established with the objective to regulate the telecommunication services, to protect the interest of service providers and consumers of the telecom sector, to promote and ensure orderly growth of the telecom and for matters connected therewith or incidental thereto. TRAI has been able to achieve the above objectives as evident from below: The supportive regulatory environment created by TRAI through issue of various regulations, directions and orders has contributed significantly in the growth of telecom services in terms of increase in the number of service providers, consumer base and vast network of the telecom services in the country. These measures have resulted in overall benefits to the consumer in terms of choice of services, affordable tariff of telecom services and better quality of services.

### **9.1 Rural Telecom Policies**

DOT (Department of Telecommunications) along with C-DOT (Center for Department of Telematics) has till date provided telephone connections to about 0.2 million villages up till now and a lot still needs to be done. The DOT has various policy plans for the rural Telecom sector like

#### *9.1.1 North East Region(NE Region) Plan*

This plan is for north eastern states: The NE Region consists of the following states Assam, Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland, and Tripura. The North Eastern States are located on a mountainous terrain they are in most need of proper communication facilities. The DoT is giving special attention to the rapid development of

Telecom facilities in the NE Region of India. As a matter of policy only modern technology equipment are being inducted into in this region.

#### *9.1.2 Tribal Sub-Plan(TSP)*

Tribal Sub-Plan is with the 20 point program: This plan was developed for all rounds and faster development of Telecom facilities in tribal areas. It was started in 1989 and integrated with the 8<sup>th</sup> Five Year Plan. Its main objectives are:

- To provide telephone facilities practically on demand in Tribal and Rural Areas.
- To provide public telephones in all tribal villages.
- To provide National Subscriber Dialing to all exchanges in Tribal Areas

### **9.2 Asian Development Bank Project:**

This project is for Rural Telecommunications Infrastructure in Eastern Uttar Pradesh. In November 1996 , The Asian Development Bank sanctioned a Loan of US\$113 million for providing 50,000 Public Call Office (PCOs) to unserved villages, rural growth centers, and other rural towns in the areas covered by the eastern Uttar Pradesh State Circle in which the executing agency is Department of Telecommunications(DoT) with the borrower being India. A Public Call Office (PCO) is a Telephone Booth sublet to a shopkeeper in the area which can be utilized by the villagers for local and long distance calls on a chargeable basis.

## **10. NEXT GENERATION NETWORKS**

In the Next Generation Networks, multiple access networks can connect customers to a core network based on IP technology. These access networks include fiber optics or coaxial cable networks connected to fixed locations or customers connected through wi-fi as well as to 3G and 4G networks connected to mobile users. As a result, in the future, it would be impossible to identify whether the next generation network is a fixed or mobile network and the wireless access broadband would be used both for fixed and mobile services. It would then be futile to differentiate between fixed and mobile networks – both fixed and mobile users will access services through a single core network. Most telecom companies won 3G and 4G licences in a competitive auction. They have now rolled out their third-generation (3G) mobile services since early 2010, but most companies will officially launch fourth-generation (4G) mobile services based on LTE or Long Term Evolution technology from 2012.

Indian telecom networks are not so intensive as developed country's telecom networks and India's teledensity is low only in rural areas. 670,000 route kilometers (419,000 miles) of optical fibers has been laid in India by the major operators, even in remote areas and the process continues. BSNL alone has laid optical fiber to 30,000 Telephone Exchanges out of their 36 Exchanges. Keeping in mind the viability of providing services in rural areas, an attractive solution appears to be one which offers multiple service facility at low costs. A rural network based on the extensive optical fiber network, using Internet Protocol and offering a variety of services and the availability of open platforms for service development, viz. the Next Generation Network, appears to be an attractive proposition. Fibre network can be easily converted to Next Generation network and then used for delivering multiple services at cheap cost.

## 11. CONCLUSION

The telecom industry in India has witnessed a phenomenal and manifold growth over the recent years. In the country, personalized telecom access has become an essential necessity of life for a growing number of people. The telecom sector in India holds unlimited potential talking of future growth. In the nation, both Public as well as private firms are vigorously enhancing their technologies in a venture to take the telecom industry in the country to a much higher development.

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