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INDIAN TELECOMMUNICATION SECTOR: A PARADIGM SHIFT

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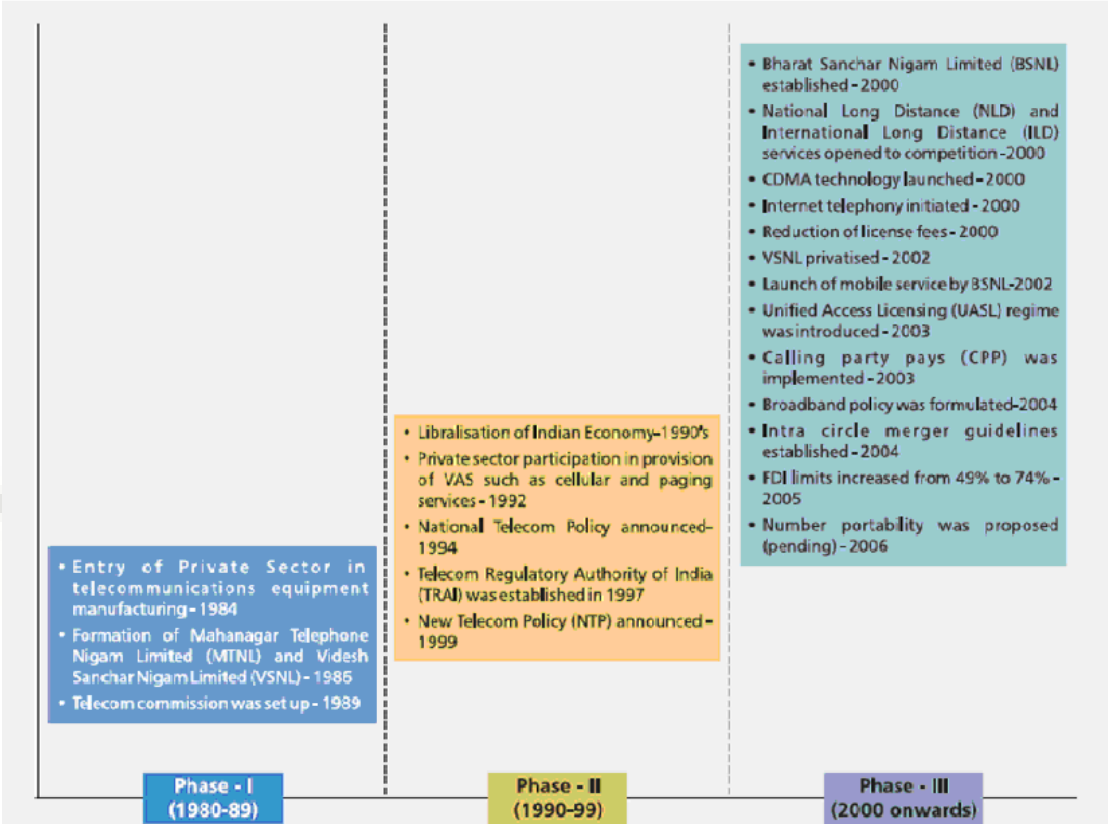
ABSTRACT

This paper discusses the characteristics and formation of recent trends in the telecommunications industry and undergoing significant changes in telecommunications sector. *Paper focus on telecommunication sector from pre deregulated economy times to the current in the light of technical and infra structural growth in the same segment and also envisages the future platform.*

KEYWORDS
Indian telecommunication sector, I.T.

INTRODUCTION: EVOLUTION OF TELECOMMUNICATION SECTOR IN INDIA

Indian telecom sector is more than 165 years old. Telecommunications was first introduced in India in 1851 when the first operational land lines were laid by the government near Kolkata (then Calcutta), although telephone services were formally introduced in India much later in 1881. Further, in 1883, telephone services were merged with the postal system. In 1947, after India attained independence, all foreign telecommunication companies were nationalised to form the Posts, Telephone and Telegraph (PTT), a body that was governed by the Ministry of Communication. The Indian telecom sector was entirely under government ownership until 1984, when the private sector was allowed in telecommunication equipment manufacturing only. The government concretised its earlier efforts towards developing R&D in the sector by setting up an autonomous body – Centre for Development of Telematics (C-DOT) in 1984 to develop state-of-the-art telecommunication technology to meet the growing needs of the Indian telecommunication network. 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).
The entire evolution of the telecom industry can be classified into three distinct phases as exhibited in the following figure.



(Source www.dotindia.com)

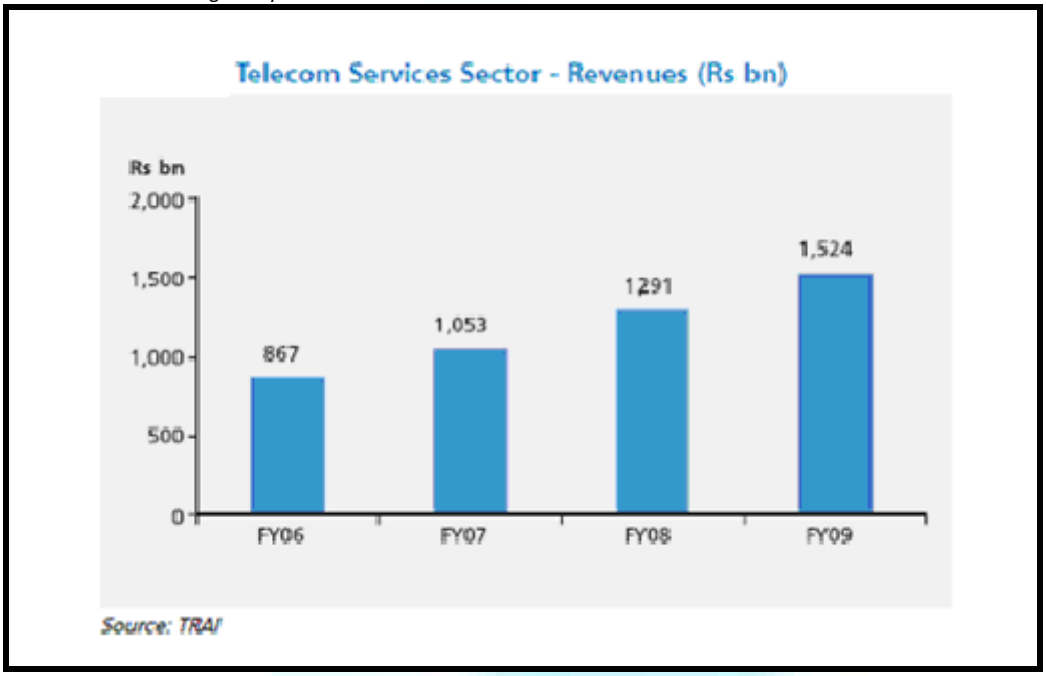
Until the industry was liberalised in the early nineties, it was a heavily government-controlled and small-sized market, Government policies have played a key role in shaping the structure and size of the Telecom industry in India. As a result, the Indian telecom market is one of the most liberalised markets in the world with private participation in almost all of its segments.

STATUS OF TELECOM SECTOR

In today's information age, the telecommunication industry has a vital role to play. Considered as the backbone of industrial and economic development, the industry has been aiding delivery of voice and data services at rapidly increasing speeds, and thus, has been revolutionising human communication.

The Indian Telecommunications network with 621 million connections (as on March 2010) is the third largest in the world. The sector is growing at a speed of 45% during the recent years. This rapid growth is possible due to various proactive and positive decisions of the Government and contribution of both by the public and the private sectors. The rapid strides in the telecom sector have been facilitated by liberal policies of the Government that provides easy market access for telecom equipment and a fair regulatory framework for offering telecom services to the Indian consumers at affordable prices. Presently, all the telecom services have been opened for private participation.

According to the TRAI, the total gross revenue of the Indian telecom services industry was Rs. 1,524 bn in FY09 up from Rs 1,291 bn in FY08 registering a growth of 18.03% over FY08 and its subscriber base grew by 43% over FY08 to touch 429.70 mn subscribers in FY09.



However, much of this growth can be attributed to the unprecedented growth in mobile telephony as the number of mobile subscribers grew at an astounding rate from 10 million in 2002 to 392 million in 2009. Besides, the growth in the service and IT and ITeS sector also increased the prominence of the telecom industry in India. Telecom has emerged as a key infrastructure for economic and consumer growth because of its multiplier effect and the fact that it is beneficial to trade in other industries. The contribution of the sector to GDP has been increasing gradually (its contribution in GDP has more than doubled to 2.83% in FY07 from 1.0% in FY92).

The government had set a target of 500 million telecom connections by 2010 the total subscriber base (wireless and wireline) in the industry crossed the 500-mn-mark and reached 509.03 mn by the end of September 2009, which took India to the second position in terms of wireless network in the world next only to China.

Prior to liberalisation, the telecom sector was monopolised by the public sector and recorded marginal growth; in fact, during 1948-1998, the incremental teledensity in the country was just 1.92%.

- The introduction of NTP'99 accelerated the growth of the sector and the teledensity increased from 2.33 in 1999 to 36.98 in 2009
- Growth was brought by the NTP-99 policy changes such as migration from fixed license fee to revenue sharing regime and cost-oriented telecom tariffs.
- 2003 onwards the government has taken certain initiatives such as unified access licensing regime, reduced access deficit, introduction of calling party pays (CPP) and revenue sharing regime in ADC that has provided further impetus to the sector.

The Indian telecom industry is characterised with intense competition, and continuous price wars. Currently, there are around a dozen telecom service providers who operate in the wired and wireless segment. The government has been periodically implementing suitable fiscal and promotional policies to boost domestic demand and to create volumes for the industry.

The Indian telecom industry has immense growth potential as the teledensity in the country is just 36 as compared with 60 in the US, 102 in the UK and 58 in Canada. The wireless segment growth has played a dominant role in taking the teledensity to the current levels. In the next few years, the industry is poised to grow further; in fact, it has already entered a consolidation phase as foreign players are struggling to acquire a pie in this dynamic industry.

FACTORS FACILITATING GROWTH OF THE SECTOR

The phenomenal growth in the Indian telecom industry was brought about by the wireless revolution that began in the nineties. Besides this, the following factors also aided the growth of the industry.

LIBERALIZATION

The process of liberalization in the country began in the right earnest with the announcement of the New Economic Policy in July 1991. Telecom equipment manufacturing was delicensed in 1991 and value added services were declared open to the private sector in 1992, following which radio paging, cellular mobile and other value added services were opened gradually to the private sector. This has resulted in large number of manufacturing units been set up in the country. As a result most of the equipment used in telecom area is being manufactured within the country. A major breakthrough was the clear enunciation of the government's intention of liberalizing the telecom sector in the National Telecom Policy resolution of 13th May 1994.

NATIONAL TELECOM POLICY 1994

In 1994, the Government announced the National Telecom Policy which defined certain important objectives, including availability of telephone on demand, provision of world class services at reasonable prices, improving India's competitiveness in global market and promoting exports, attractive 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.

TELECOM REGULATORY AUTHORITY OF INDIA (TRAI)

The entry of private service providers brought with it the inevitable need for independent regulation. The Telecom Regulatory Authority of India (TRAI) was, thus, established with effect from 20th February 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act, 1997, to regulate telecom

services, including fixation/revision of tariffs for telecom services which were earlier vested in the Central Government.
TRAI's mission is to Create and nurture conditions for growth of telecommunications in the country in manner and at a pace, which will enable India to play a leading role in emerging global information society.
To provide a fair and transparent policy environment, this promotes a level playing field and facilitates fair competition.
The TRAI Act was amended by an ordinance, effective from 24 January 2000, establishing a Telecommunications Dispute Settlement and Appellate Tribunal (TDSAT) to take over the adjudicatory and disputes functions from TRAI. TDSAT was set up to adjudicate any dispute between a licensor and a licensee, between two or more service providers, between a service provider and a group of consumers, and to hear and dispose of appeals against any direction, decision or order of TRAI.

NEW TELECOM POLICY 1999

The most important milestone and instrument of telecom reforms in India is the New Telecom Policy 1999 (NTP 99). The New Telecom Policy, 1999 (NTP-99) was approved on 26th March 1999, to become effective from 1st April 1999. NTP-99 laid down a clear roadmap for future reforms, contemplating the opening up of all the segments of the telecom sector for private sector participation
Key features of the NTP 99 include:

- Strengthening of Regulator.
- National long distance services opened to private operators.
- International Long Distance Services opened to private sectors.
- Private telecom operators licensed on a revenue sharing basis, plus a one-time entry fee.
- Resolution of problems of existing operators envisaged.
- Direct interconnectivity and sharing of network with other telecom operators within the service area was permitted.
- Department of Telecommunication Services (DTS) corporatised in 2000.
- Spectrum Management made transparent and more efficient.

All the commitments made under NTP 99 have been fulfilled; each one of them, in letter and spirit, some even ahead of schedule, and the reform process is now complete with all the sectors in telecommunications opened for private competition.

NATIONAL LONG DISTANCE

National Long Distance opened for private participation. The Government announced on 13.08.2000 the guidelines for entry of private sector in National Long Distance Services without any restriction on the number of operators. The DOT guidelines of license for the National Long Distance operations were also issued.

INTERNATIONAL LONG DISTANCE

In the field of international telephony, India had agreed under the GATS to review its opening up in 2004. However, open competition in this sector was allowed with effect from April 2002 itself. There is now no limit on the number of service providers in this sector. The licence for ILD service is issued initially for a period of 20 years, with automatic extension of the license by a period of 5 years.
At present 24 ILD service providers (22 Private and 2 Public Sector Undertaking) are there. As per current roll out obligations under ILD license, the licensee undertakes to fulfill the minimum network roll out obligations for installing at least one Gateway Switch having appropriate interconnections with at least one National Long Distance service licensee. There is no bar in setting up of Point of Presence (PoP) or Gateway switches in remaining location of Level I Tax's. Preferably, these PoPs should conform to Open Network Architecture (ONA) i.e. should be based on internationally accepted standards to ensure seamless working with other Carrier's Network.

UNIVERSAL SERVICE OBLIGATION FUND

Another major step was to set up the Universal Service Obligation Fund with effect from April 1, 2002. An administrator was appointed for this purpose. Subsequently, the Indian Telegraph (Amendment) Act, 2003 giving statutory status to the Universal Service Obligation Fund (USOF) was passed by both Houses of Parliament in December 2003. The Fund is to be utilized exclusively for meeting the Universal Service Obligation and the balance to the credit of the Fund will not lapse at the end of the financial year. Credits to the Fund shall be through Parliamentary approvals. The Rules for administration of the Fund known as Indian Telegraph (Amendment) Rules, 2004 were notified on 26.03.2004.
The resources for implementation of USO are raised through a Universal Service Levy (USL) which has presently been fixed at 5% of the Adjusted Gross Revenue (AGR) of all Telecom Service Providers except the pure value added service providers like Internet, Voice Mail, E-Mail service providers etc. In addition, the Central Govt. may also give grants and loans.
An Ordinance was promulgated on 30.10.2006 as the Indian Telegraph (Amendment) Ordinance 2006 to amend the Indian Telegraph Act, 1885 in order to enable support for mobile services, broadband connectivity, general infrastructure and pilot project for new technological developments in rural and remote areas of the country. Subsequently, an Act has been passed on 29.12.2006 as the Indian Telegraph (Amendment) Act 2006 to amend the Indian Telegraph Act, 1885.
USFO has initiated action to bring mobile services within the ambit of Universal Service Obligation Fund (USOF) activities. Under this initiative, 7387 mobile infrastructure sites are being rolled out, in the first phase, across 500 districts and 27 states of India. This scheme will provide mobile services to approximately 0.2 million villages which where hitherto deprived of the same. As on 30th June 2010, 7183 shared towers have been set up under the First Phase of the scheme. The USOF of DOT has proposed to set up about 10,128 additional towers in order to extend the mobile coverage in other uncovered areas under the Second Phase of the Scheme.

UNIFIED ACCESS SERVICES

Unified access license regime was introduced in November'2003. Unified Access Services operators are free to provide, within their area of operation, services, which cover collection, carriage, transmission and delivery of voice and/or non-voice messages over Licensee's network by deploying circuit, and/or packet switched equipment. Further, the Licensee can also provide Voice Mail, Audiotex services, Video Conferencing, Videotex, E-Mail, Closed User Group (CUG) as Value Added Services over its network to the subscribers falling within its service area on non-discriminatory basis.
The country is divided into 23 Service Areas consisting of 19 Telecom Circle and 4 Metro Service Areas for providing Unified Access Services (UAS). The licence for Unified Access Services is issued on non-exclusive basis, for a period of 20 years, extendable by 10 years at one time within the territorial jurisdiction of a licensed Service Area. Revenue and the fee/royalty for the use of spectrum and possession of wireless telegraphy equipment are payable separately. The frequencies are assigned by WPC wing of the Department of Telecommunications from the frequency bands earmarked in the applicable National Frequency Allocation Plan and in coordination with various users subject to availability of scarce spectrum.

INTERNET SERVICE PROVIDERS (ISPS)

Internet service was opened for private participation in 1998 with a view to encourage growth of Internet and increase its penetration. The sector has seen tremendous technological advancement for a period of time and has necessitated taking steps to facilitate technological ingenuity and provision of various services. The Government in the public interest in general, and consumer interest in particular, and for proper conduct of telegraph and telecom services has decided to issue the new guidelines for grant of licence of Internet services on non-exclusive basis. Any Indian company with a maximum foreign equity of 74% is eligible for grant of licence.

BROADBAND POLICY 2004

Recognizing the potential of ubiquitous Broadband service in growth of GDP and enhancement in quality of life through societal applications including tele-education, tele-medicine, e-governance, entertainment as well as employment generation by way of high-speed access to information and web based communication; Government has announced Broadband Policy in October 2004. The main emphasis is on the creation of infrastructure through various technologies that can contribute to the growth of broadband services. These technologies include optical fibre, Asymmetric Digital Subscriber Lines (ADSL), cable

TV network; DTH etc. Broadband connectivity has been defined as "Always On" with the minimum speed of 256 kbps. It is estimated that the number of broadband subscribers would be 20 million by 2010. With a view to encourage Broadband Connectivity, both outdoor and indoor usage of low power Wi-Fi and Wi-Max systems in 2.4 GHz-2.4835 GHz band has been delicensed. The use of low power indoor systems in 5.15-5.35 GHz and 5.725-5.875 GHz bands has also been delicensed in January 05. The SACFA/WPC clearance has been simplified. The setting up of National Internet Exchange of India (NIXI) would enable bringing down the international bandwidth cost substantially, thus making the broadband connectivity more affordable.

The prime consideration guiding the Policy includes affordability and reliability of Broadband services, incentives for creation of additional infrastructure, employment opportunities, induction of latest technologies, national security and brings in competitive environment so as to reduce regulatory interventions.

By this new policy, the Government intends to make available transponder capacity for VSAT services at competitive rates after taking into consideration the security requirements. The service providers permitted to enter into franchisee agreement with cable TV network operators. However, the Licensee shall be responsible for compliance of the terms and conditions of the licence. Further in the case of DTH services, the service providers permitted to provide Receive-Only-Internet Service. The role of other facilitators such as electricity authorities, Departments of ITs of various State Governments, Departments of Local Self Governments, Panchayats, Departments of Health and Family Welfare, Departments of Education is very important to carry the advantage of broadband services to the users particularly in rural areas.

Target has been set for 20 million broadband connections by 2010 and providing Broadband connectivity to all secondary and higher secondary schools, public health institutions and panchayats by 2010.

In rural areas, connectivity of 512 KBPS with ADSL 2 plus technology (on wire) will be provided from about 20,000 existing exchanges in rural areas having optical fibre connectivity. Community Service Centres, secondary schools, banks, health centres, Panchayats, police stations etc. can be provided with this connectivity in the vicinity of above-mentioned 20,000 exchanges in rural areas. DOT will be subsidizing the infrastructure cost of Broadband network through support from USO Fund to ensure that Broadband services are available to users at affordable tariffs.

TARIFF CHANGES

The Indian Telecom Sector has witnessed major changes in the tariff structure. The Telecommunication Tariff Order (TTO) 1999, issued by regulator (TRAI), had begun the process of tariff balancing with a view to bring them closer to the costs. This supplemented by Calling Party Pay (CPP), reduction in ADC and the increased competition, has resulted in a dramatic fall in the tariffs. ADC has been abolished for all calls w.e.f. 1st October 2008.

- The peak National Long Distance tariff for above 1000 Kms. in 2000 has come down from US$ 0.67 per minute to US$ 0.02 per minute in 2009.
- The International Long Distance tariff from US$ 1.36 per minute in 2000 to US$ 0.16 per minute in 2009 for USA, Canada & UK.
- The mobile tariff for local calls has reduced from US$0.36 per minute in 1999 to US$ 0.009 - US$ 0.04 per minute in 2009.
- The Average Revenue Per User of mobile is between US$ 5.06 - US$ 7.82 per month

FOREIGN DIRECT INVESTMENT (FDI)

- In Basic, Cellular Mobile, Paging and Value Added Service, and Global Mobile Personal Communications by Satellite, Composite FDI permitted is 74% (49% under automatic route) subject to grant of license from Department of Telecommunications subject to security and license conditions**.** (para 5.38.1 to 5.38.4 of consolidate FDI Policy circular 1/2010 of DIPP)
- FDI upto 74% (49% under automatic route) is also permitted for the following: -
    - Radio Paging Service
    - Internet Service Providers (ISP's)
- FDI upto 100% permitted in respect of the following telecom services: -
    - Infrastructure Providers providing dark fibre (IP Category I);
    - Electronic Mail; and
    - Voice Mail
    - Subject to the conditions that such companies would divest 26% of their equity in favor of Indian public in 5 years, if these companies were listed in other parts of the world.
- In telecom manufacturing sector 100% FDI is permitted under automatic route.
- The Government has modified method of calculation of Direct and Indirect Foreign Investment in sector with caps(para 4.1 of consolidate FDI Policy circular 1/2010 of DIPP) and have also issued guidelines on downstream investment by Indian Companies. (para 4.6 of consolidate FDI Policy circular 1/2010 of DIPP)
- Guidelines for transfer of ownership or control of Indian companies in sectors with caps from resident Indian citizens to non-resident entities have been issued (para 4.2.3 of consolidate FDI Policy circular 1/2010 of DIPP)

INVESTMENT OPPORTUNITIES AND INCENTIVES

An attractive trade and investment policy and lucrative incentives for foreign collaborations have made India one of the world's most attractive markets for the telecom equipment suppliers and service providers.

- No industrial license required for setting up manufacturing units for telecom equipment.
- 100% Foreign Direct Investment (FDI) is allowed through automatic route for manufacturing of telecom equipments.
- Payments for royalty, lump sum *fee* for transfer of technology and payments for use of trademark/brand name on the automatic route.
- Foreign equity of 74% (49 % under automatic route) permitted for telecom services - basic, cellular mobile, paging, value added services, NLD, ILD, ISPs - and global mobile personal communications by satellite.
- Full repatriability of dividend income and capital invested in the telecom sector.

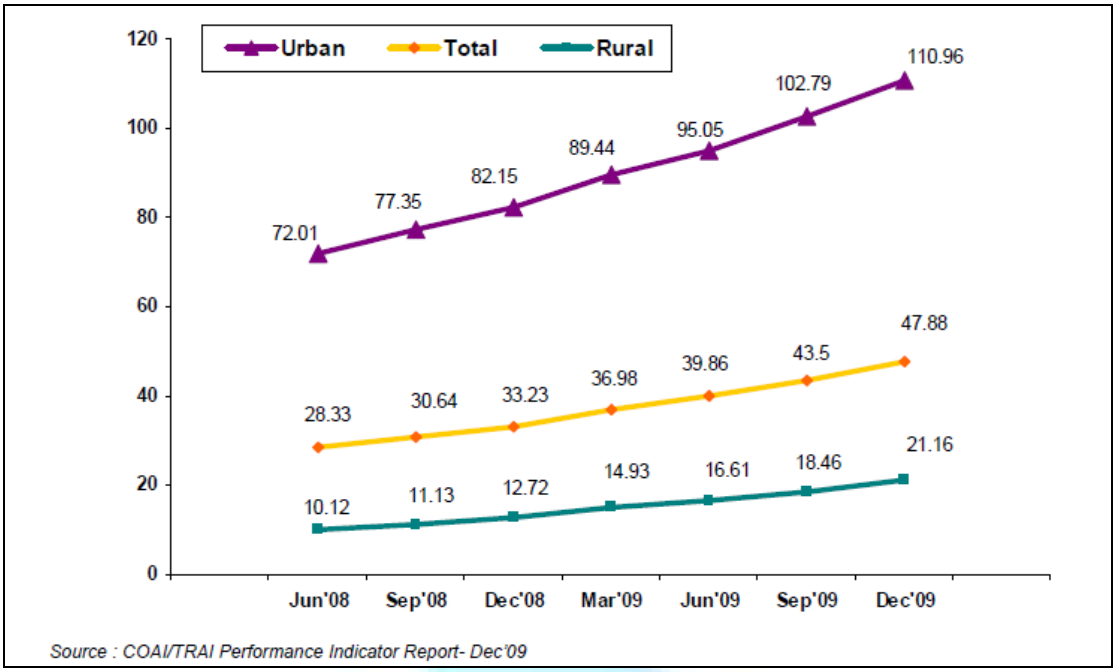
NETWORK EXPANSION

The telecom sector has shown robust growth during the past few years. It has also undergone a substantial change in terms of mobile versus fixed phones and public versus private participation. The following table shows the growth trend of telecom sector from last five years:

- The number of telephones has increased from 54.63 million as on 31.03.2003 to 621.28 million as on 31.03.2010.
- Wireless subscribers increased from 13.3 million as on 31.03.2003 to 584.32 million as on 31.03.2010.
- The fixed line subscribers decreased from 41.33 million in 31.03.2003 to 36.95 million in 31.03.2010
- The broadband subscribers grew from a meager 0.18 million to 8.76 million as on 31.03.2010.

TREND IN TELE-DENSITY

Tele-density in the country increased from 5.11% in 2003 to 52.74 % in March 2010. In the rural area teledensity increased from 1.49% in Mar 2003 to 24.31% in March 2010 and in the urban areas it is increased from 14.32% in Mar 2003 to119.45% in March 2010.This indicates a rising trend of Indian telecom subscribers.



Source : COAI/TRAI Performance Indicator Report- Dec'09

RURAL TELEPHONY

Apart from the 200.77million fixed and WLL connections on March 2010 provided in the rural areas, 570000 uncovered VPTs have been provided as on March 2010. Thus, 96% of the villages in India have been covered by the VPTs. More than 3 lakh PCOs are also providing community access in the rural areas. Further, Mobile Gramin Sanchar Sewak Scheme (GSS) – a mobile Public Call Office (PCO) service is provided at the doorstep of villagers. At present, 2772 GSSs are covering 12043 villages. Also, to provide Internet service, Sanchar Dhabas (Internet Kiosks) have been provided in more than 3500 Block Headquarters out of the total 6337 Blocks in the country. The target of 80 million rural connections by 2010 have already met during year 2008 itself. USOF subsidy support scheme is also being utilized for sharing wireless infrastructure in rural areas with about 19,000 towers by 2010.

INTRODUCTION OF CALLING PARTY PAYS (CPP)

The CPP regime was introduced in India in 2003 and under this regime, the calling party who initiated the call was to bear the entire cost of the call. This regime came to be applicable for mobile to mobile calls as well as fixed line to mobile calls. So far India had followed the Receiving Party Pays (RPP) system where the subscriber used to pay for incoming calls from both mobile as well as fixedline networks. Shifting to the CPP system has greatly fuelled the subscriber growth in the sector.

CHANGING DEMOGRAPHIC PROFILE

The changing demographic profile of India has also played an important role in subscriber growth. The changed profile is characterised by a large young population, a burgeoning middle class with growing disposable income, urbanisation, increasing literacy levels and higher adaptability to technology. These new features have multiplied the need to be connected always and to own a wireless phone and therefore, in present times mobiles are perceived as a utility rather than a luxury.

OUTLOOK

The cut-throat competition and intense tariff wars have had a negative impact on the revenue of players. Despite the challenges, the Indian telecom industry will thrive because of the immense potential in terms of new users. India is one of the most-attractive telecom markets because it is still one of the lowest penetrated markets. The government is keen on developing rural telecom infrastructure and is also set to roll out next generation or 3G services in the country. Operators are on an expansion mode and are investing heavily on telecom infrastructure. Foreign telecom companies are acquiring considerable stakes in Indian companies. Burgeoning middle class and increasing spending power, the government's thrust on increasing rural telecom coverage, favourable investment climate and positive reforms will ensure that India's high potential is indeed realised.

ROLE OF TELECOMMUNICATION IN INDIA'S DEVELOPMENT

CONTRIBUTION TO GDP

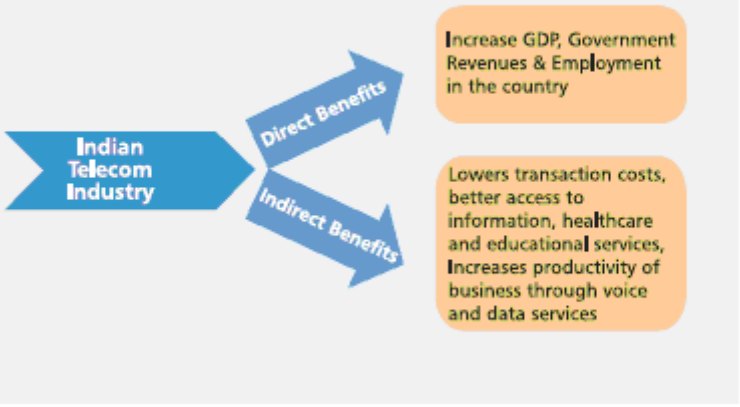
According to the UNCTAD, there is a direct correlation between the growth in mobile teledensity and the growth in GDP per capita in developing countries, which tend to have a high percentage of rural population. The share of the telecom services industry in the total GDP has been rising over the past few years (the telecom sector contribution in GDP went up from 2.52% in FY05 to 2.83% in FY07).

Share of Telecom Sector in India's GDP

	2004-05 (Rs bn)	2005-06 (Rs bn)	2006-07 (Rs bn)
Gross Domestic Product (at factor cost) at Current prices	28439	32006	37175
Total Telecom Revenue	716	867	1053
Contribution of Telecom sector to GDP (%)	2.52	2.71	2.83

Source: TRAI (PIR – 2006, 2007), As per latest available data

Economic Benefits of Telecom Industry



Source: D&B Research

EMPLOYMENT

The Indian telecommunication industry employs over 400,000 direct employees and about 85% of these employees are from government-owned companies. The ratio of number of subscribers to employees, an indication of efficiency and profitability, is much higher for private companies than for government companies.

Employment in the Indian Telecom Industry

Subscribers (mn)		FY05	FY06	FY07
	Government companies	52.08	60.45	71.39
	Private companies	46.33	79.87	134.47
	Total	98.41	140.32	205.86
Employees				
	Government companies	394,334	382,105	369035
	Private companies	42,557	47,295	63736
	Total	436,891	429,400	432771
Subscribers per Employee				
	Government companies	132	158	193
	Private companies	1,089	1,678	2,110

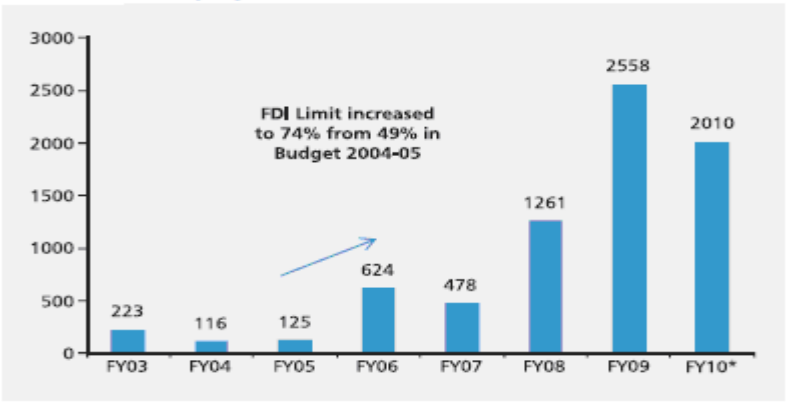
Source: Department of Telecom, TRAI, As per latest available data with TRAI

FOREIGN DIRECT INVESTMENT (FDI)

Foreign direct investment has been one of the major contributors in the growth of the Indian economy, and therefore, the need for higher FDI is felt across sectors in the Indian economy. The telecom sector has played a crucial role in attracting FDI in India. The share of telecom sector in the total FDI inflows in India has gone up to 10% in FY09 as compared with just 3% in FY05.

The telecom sector requires huge investments for its expansion as it is capital-intensive and FDI plays a vital role in meeting the fund requirements for expansion of the telecom sector. Telecom accounts for almost 10% of the total FDI inflows in the country and has been the third-largest sector to attract FDI in India in the post-liberalisation era

FDI Equity Inflows



**Apr-Sep'09*
Include: radio paging, cellular mobile, basic telephone services
Source: DIPP

The Indian telecom industry has been an attractive avenue for foreign investors over the years. As per DIPP figures, the cumulative FDI inflow during August 1991 to June 2009 period, in the telecommunication sector amounted to US$ 113 bn. FDI calculation takes into account radio paging, cellular mobile and basic

telephone services in the telecommunication sector.

In the 2004-05 Budget, the government raised the FDI limit from 49% to 74% in the telecom services segment subject to retention of local management control. According to the new norms, 26% share out of the 74% should be held by an Indian company or an Indian citizen with Indian management. Further, 100% FDI is permitted in telecom manufacturing, category I infrastructure providers, ISPs without gateway, call centres and IT-enabled services. Further, direct or indirect FDI up to 74% is permitted subject to licensing and security requirements for ISPs with gateways, radio paging operators and category II infrastructure providers.

The relaxation in FDI norms has attracted many foreign telecom majors to the sector. The presence of foreign players has not only encouraged faster infrastructure development and upgradation but also has opened up the domestic industry to foreign competition. The inflow of FDI has provided tremendous impetus to the sector in the past few years and the attractiveness of the sector has kept the FDI inflows growing steadily.

During FY09 the FDI in the telecom sector at US$ 2,558 mn was 103% higher than that seen in FY08 at US$ 1,261 mn. Further, the FDI in the sector has already reached US$ 2010 mn for a six month period of FY10 (Apr-Sep 09) and is expected to surpass the total FDI for FY09.

The government's liberalised FDI policies have resulted in several foreign companies entering into the Indian markets. The influx of foreign players in the Indian telecom industry has led to capacity creation, and better infrastructure, which in turn has bettered the network quality. The rise in FDI has also enabled technology transfer, market access and has improved organisational skills; going forward, FDI could be used for providing telecom services to rural areas, where teledensity is still very low.

The change in FDI policy that has raised the FDI limit from 49% to 74% for the sector has made it more attractive for foreign players. In the long run the growth prospects of telecom players that have foreign partners will improve and other players will get new avenues to raise capital.

GROWTH OF IT-ITES AND FINANCIAL SECTOR

India has entered the league of countries with the most-advanced telecommunication infrastructure after the industry was deregulated. Furthermore, deregulation has stimulated India's economic growth through industry growth and through rise in investments. It is evident that a well-developed communication sector improves access to social networks, lowers transaction costs, increases economic opportunities, widens markets, and provides better access to information, healthcare and educational services. The growth in Indian telecom sector has been concomitant with overall growth in GDP, government revenue, employment et al. Besides, telecommunication has increased efficiency, reduced transaction costs, attracted investments and has created new opportunities for business and employment.

The NTP-99 was particularly helpful for the ITeS-BPO industry as it ended the government monopoly in international calling by introducing IP telephony. After the introduction of IP telephony, there was rapid growth in the number of data processing centres and inbound/outbound call centres, which ultimately led to the outsourcing revolution in India.

The telecom sector has been instrumental in creating jobs for a vast pool of talented and knowledge professionals in the IT and ITeS-BPO industry, which thrives on reliable telecommunication infrastructure. India has become an important outsourcing destination for the world and the boom in this sector also has transformed India's economic dynamics. The evolution of telecom sector has brought about a revolutionary change in the way some businesses operate.

Another beneficiary of the telecom revolution is the financial services industry, which has been on a growth trajectory. The progress and quality of the financial sector has been a key factor that has driven the pace and diversity of the real economy. India has an extensive and well-developed financial sector with wide and sophisticated banking network. Banking in India has become service-oriented, and has matured greatly from the days of walk-in customers to the present situation when banks have migrated to a 24-hour banking platform to attract customers; however, this disintermediation in the business has led banks to be extremely prudent in terms of their internal operations and has led them to adopt newer products and delivery channels. Further, with introduction of internet & mobile banking the long ques at the banks are slowly becoming a thing of the past.

Both the financial and the IT-ITeS segments rely on good domestic as well as international network connectivity; therefore, there is a need for a sound telecommunication network.

PERFORMANCE OF TELECOM EQUIPMENT MANUFACTURING SECTOR

As a result of Government policy, progress has been achieved in the manufacturing of telecom equipment in the country. There is a significant telecom equipment-manufacturing base in the country and there has been steady growth of the manufacturing sector during the past few years. The figures for production and export of telecom equipment are shown in table given below:

(Rs. in crore)

Year	Production	Export
2002-03	14400	402
2003-04	14000	250
2004-05	16090	400
2005-06	17833	1500
2006-07	23656	1898
2007-08	41270	8131
2008-09	48800	11000
2009-10	50000	13500
	(projected @ 18%)	(projected @ 25%)

Rising demand for a wide range of telecom equipment, particularly in the area of mobile telecommunication, has provided excellent opportunities to domestic and foreign investors in the manufacturing sector. The last two years saw many renowned telecom companies setting up their manufacturing base in India. Ericsson set up GSM Radio Base Station Manufacturing facility in Jaipur. Elcoteq set up handset manufacturing facilities in Bangalore. Nokia and Nokia Siemens Networks have set up their manufacturing plant in Chennai. LG Electronics set up plant of manufacturing GSM mobile phones near Pune. Ericsson launched their R&D Centre in Chennai. Flextronics set up an SEZ in Chennai. Other major companies like Foxconn, Aspcom, Solectron etc have decided to set up their manufacturing bases in India.

The Government has already set up Telecom Equipment and Services Export Promotion Council and Telecom Testing and Security Certification Centre (TETC). A large number of companies like Alcatel, Cisco have also shown interest in setting up their R&D centers in India. With above initiatives India is expected to be a manufacturing hub for the telecom equipment.

OPPORTUNITIES

India offers an unprecedented opportunity for telecom service operators, infrastructure vendors, manufacturers and associated services companies. A host of factors are contributing to enlarged opportunities for growth and investment in telecom sector:

- An expanding Indian economy with increased focus on the services sector
- Population mix moving favourably towards a younger age profile
- Urbanization with increasing incomes

Investors can look to capture the gains of the Indian telecom boom and diversify their operations outside developed economies that are marked by saturated telecom markets and lower GDP growth rates.

Inflow of FDI into India's telecom sector during April 2000 to Feb. 2010 was about Rs 405,460 million. Also, more than 8 per cent of the approved FDI in the country is related to the telecom sector.

RESEARCH & DEVELOPMENT

India has proven its dominance as a technology solution provider. Efforts are being continuously made to develop affordable technology for masses, as also

comprehensive security infrastructure for telecom network. Research is on for the preparation of tested infrastructure for enabling interoperability in Next Generation Network. It is expected that the telecom equipment R & D shall be doubled by 2010 from present level of 15%. Modern technologies inductions are being promoted. Pilot projects on the existing and emerging technologies have been undertaken including WiMax, 3G etc. Emphasis is being given to technologies having potential to improve rural connectivity. Also to beef up R&D infrastructure in the telecom sector and bridge the digital divide, cellular operators, top academic institutes and the Government of India together set up the Telecom Centres of Excellence (COEs). The main objectives of the COEs are as follows:

- Achieve Telecom Vision 2010 that stipulates a definite growth model and take it beyond.
- Secure Information Infrastructure that is vital for country's security.
- Capacity Building through Knowledge for a sustained growth.
- Support Planned Predictive Growth for stability.
- Reduce Rural Urban Digital Divide to reach out to masses.

Utilize available talent pool and create environment for innovation.

- Management of National Information Infrastructure (NII) during Disaster
- Cater the requirement of South East Asia as Regional Telecom Leader

To achieve these objectives 7 Centre of Excellences in various field of Telecom have been set up with the support of Government and the participation of private/public telecom operators as sponsors, at the selected academic institutions of India. The details of COEs are enumerated below: -

TCOES CENTRES

Sr. No.	*Associate Institute*	*Sponsor*	*Work Assigned*
1	IIT Kharagpur	Vodafone Essar & Texas Instruments	Next Generation Network (NGN) & Network Technology
2	IIT Delhi	Bharti Airtel	Telecom Technology & Management
3	IISC (Indian Institute of Science), Bangalore	Aircel & Texas instrument	Information Security & Disaster Management of Infrastructure
4	IIT Kanpur	BSNL & Alphion	Technology Integration, Multimedia & Computational Mathematics
5	IIT Chennai	Reliance Communication	Telecom Infrastructure & Energy
6	IIT Mumbai	Tata Teleservices	Rural Applications
7	IIM Ahmedabad	Idea Cellular	Policy, Regulation, Governance, Customer care & Marketing

3G & BROADBAND WIRELESS SERVICES (BWA)

The government has in a pioneering decision, decided to auction 3G & BWA spectrum. The broad policy guidelines for 3G & BWA have already been issued on 1st August 2008 and allotment of spectrum has been planned through simultaneously ascending e-auction process by a specialized agency. The 3G will allow telecom companies to offer additional value added services such as high resolution video and multi media services in addition to voice, fax and conventional data services with high data rate transmission capabilities. BWA will become a predominant platform for broadband roll out services. It is also an effective tool for undertaking social initiatives of the Government such as e-education, telemedicine, e-health and e-Governance. Providing affordable broadband, especially to the suburban and rural communities is the next focus area of the Department.

BSNL & MTNL have already been allotted 3G & BWA spectrum with a view to ensuring early roll out of 3G & WiMax services in the country. They will pay the same price for the spectrum as discovered through the auction. While, Honbl'e Prime Minister launched the MTNL's 3G mobile services on the inaugural function of 'India Telecom 2008' held on 11th December 2008, BSNL launched its countrywide 3G services from Chennai, in the southern Tamil Nadu state on 22nd February 2009.

The Department of Telecommunications (DoT), started allocating 3G spectrum to telecom operators, giving relief to all the seven companies that emerged successful in the intense bidding process that took place in May this year. But DoT has made some changes in the licence terms to ensure speedy roll-out of 3G networks and also efficient use of scarce spectrum.

DoT has said that operators were authorised to use the spectrum for 20 years from September 1, 2010, even if their telecom licences expired before that period. DoT has also imposed roll-out obligation under which the operators will have to cover at least 90 per cent of the service areas in the metro circles and at least 50 per cent in most of the other circles within the next five years.

Besides State-owned BSNL and MTNL, seven private operators:

Bharti Airtel, Vodafone Essar, Reliance Communications, Tata Teleservices, Idea Cellular, Aircel and STel have got 3G spectrum.

In the two metros Delhi and Mumbai, three operators, Bharti Airtel, Vodafone and Reliance Communications, had emerged winners, while no operator could bag pan-India spectrum in the auction.

MOBILE NUMBER PORTABILITY (MNP)

Mobile Number Portability (MNP) allows subscribers to retain their existing telephone number when they switch from one access service provider to another irrespective of mobile technology or from one technology to another of the same or any other access service provider. The Government has announced the guidelines for Mobile Number Portability (MNP) Service Licence in the country on 1st August 2008 and has issued a separate Licence for MNP service w.e.f. 20.03.2009. The Department of Telecommunication (DoT) has already issued licences to two global companies (M/s Syniverse Technologies Pvt. Ltd. and M/s MNP Interconnection Telecom Solutions India Pvt. Ltd.) for implementing the service. MNP is to be implemented in whole country in one go by 31.10.2010.

CONCLUSION

Indian telecom is world's fastest growing telecom Tremendous strides in this industry have been facilitated by the supportive and liberal policies of the Government. Especially the Telecom Policy of 1994 which opened the doors of the sector for private players. Rising demand for a wide range of telecom equipment has provided excellent opportunities for investors in the manufacturing sector.

Provision of telecom services to the rural areas in India has been recognized as another thrust area by govt. which also helps for the enormous opportunities in this sector. Therefore telecom sector in India is one of the fastest growing sectors in the country and has been zooming up the growth curve at a feverish pace in the past few years. And even the Indian Wireless Market is booming which has plenty of room for growth.

One notable break with the past is that with opening up of the developing economies and widespread sectoral reforms, catching up process has become faster. Developing countries with liberal policies have much better opportunity to leapfrog than before. Mobile experience of the low-income countries bears testimony to this process. India is a participant in this global process. There is tremendous appetite to absorb new technology. At the higher end of the market, India will mimic the most sophisticated telecom technology of the world and face all types of uncertainties that are associated with any new technology anywhere in the world. It will take time for the market for new technologies to consolidate. 'Market maturing' will be a continuous process at some of the segments of telecom sector. This holds good even today. Today's market does not guarantee 'reliable revenue stream' to investors in new technology like VoIP, broadband and 3G since they lack an existing client base. Side by side, a process of diffusion will continue unhindered in respect of established technology in the mass market.

If past trend were any guide, it would be reasonable to hope that India would complete transition into digital switching and transmission, VoIP, broadband and 3G. Though there would be always a small niche market in India, which would catch up with the cutting age of the technology, consolidation and expansion of evolving technologies across the length and the breadth of the country will follow with a lag.

Future vision of telecom is a vision of IT. Telecom will be the springboard of future expansion of IT heralding in an information society. ICT will spread among the masses and will spur innovation, entrepreneurship and growth. An expanding domestic market will deepen the synergy between the domestic and the export market and strengthen India's presence in the high-value segment of the global trade and investment. ICT benefits will spread among all, the rich and the poor,

the young and the old, the men and the women, the organized and the unorganized and the government and the governed.

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