

# Communications and Information Technology

## 12.1 TELECOMMUNICATIONS

### OVERVIEW

12.1.1 The development of world-class telecommunication infrastructure is the key to rapid economic and social development of the country. Driven by various policy initiatives, which include New Telecom Policy (NTP)-1994 and later the NTP-1999, the Indian telecom sector witnessed a complete transformation in the last decade. During this period, it has achieved phenomenal growth and is poised to take a quantum leap. For bringing further accelerated growth along with modernization in line with the trends in other developed countries, the telecommunication sector demands initiation of further policy measures and induction of state-of-the-art technologies.

### PRESENT STATUS OF TELECOM NETWORKS

12.1.2 The telecom services network has expanded from about 84000 connections (fixed line) at the time of independence to about 206.83 million working connections as on March 2007 (which in turn consists of 40.77 million fixed telephone lines and 166.05 million mobile phones). Thus India's present 206 million robust telephone network, including mobile phones, is one of the largest in the world and second largest among the emerging economies (after China) with a wide range of services such as basic, cellular, Internet,

paging, Very Small Aperture Terminal (VSAT), etc. The status of the present telecom network is as shown in Table 12.1.1.

12.1.3 The National Internet Exchange of India has been set up by the Department of Information Technology (DIT) to ensure that Internet traffic, originating and destined for India, is routed within India. This is expected to substantially bring down the cost of Internet usage. This will also enable more efficient use of international bandwidth and saving of foreign exchange. It will further improve the quality of services for the customers by being able to avoid multiple international hops and thus lowering delays. All these in turn will lead to the popularization of '.in' domain name and expansion of Internet.

**TABLE 12.1.1**  
**Telecom Network Status in India as on March 2007**

|                                     |                     |
|-------------------------------------|---------------------|
| Number of telephone connections     | 206.83 million      |
| Number of telephone exchanges       | 38338               |
| Switching capacity (Public)         | 88.82 million (PSU) |
| VPTs                                | 564610              |
| Rural phones (Fixed + CDMA)         | 22655691            |
| Wireless (CDMA & GSM) subscribers   | 166.05 million      |
| Internet connections                | 9.21 million        |
| Broadband subscribers               | 2.28 million        |
| Optical fibre route length (Public) | 519155 route km     |
| Microwave route length (BSNL)       | 64506.64 km         |

Source: DoT.

12.1.4 The government has taken several steps to encourage participation of private players to create a competitive environment in the sector. Consequently, the private sector is now playing an important role in expansion of the telecom sector. The number of private sector licensees in telecommunications as shown in Table 12.1.2 also confirms this.

#### TELECOM DEVELOPMENT—INTERNATIONAL COMPARISON

12.1.5 Telecommunication has grown very rapidly in India. However, viewed in the context of global growth

**TABLE 12.1.2**  
**Private Sector Participation (as on 31 March 2006)**  
(Registrations/Licenses Issues)

| Purpose/Area                      | No. of Licenses/<br>LOIs/Registration |
|-----------------------------------|---------------------------------------|
| Unified Access/Cellular Mobiles   | 78                                    |
| Basic Services                    | 2                                     |
| National Long Distance            | 4                                     |
| Infrastructure Provider-I         | 105                                   |
| International Long Distance       | 5                                     |
| Internet Service                  | 399                                   |
| Voice Mail and Audiotext Service  | 15                                    |
| Public Mobile Radio Trunk Service | 37                                    |
| VSAT Service                      | 11                                    |

Source: Working Group Report for Eleventh Plan on Telecommunications Sector, DoT.

pattern and indicators, it needs to achieve more in terms of teledensity as compared to other countries. There is a positive correlation between the teledensity and the GDP of a country as the growth in the telecommunication sector has linkages to the growth of other sectors of the economy. The status of teledensity along with other indicators such as per capita GDP, Internet users, etc., at international level is given in the Table 12.1.3.

#### REVIEW OF THE TENTH PLAN

##### Growth during the Tenth Plan Period

12.1.6 The telecom sector has shown tremendous growth during the Tenth Plan period. It has also undergone a substantial change in terms of mobile versus fixed phones and public versus private participation. The Tenth Plan had envisaged a teledensity of 9.91% by March 2007. In order to achieve this target, about 65.0 million additional connections were needed to be provided during the Tenth Plan. However, during 2002–07, the total telephone connections increased by 161.86 million as on 31 March 2007, thereby achieving a teledensity of 18.31% by March 2007 and exceeding the Tenth Plan target by 149%. With the opening of the telecom sector to the private operators, their share in the number of subscribers has significantly increased, which is evident from the Table 12.1.4.

**TABLE 12.1.3**  
**Status of Telecom Indicators in Some Countries as on December 2005**

| Country            | Population<br>(Million) | GDP (per capita)<br>US\$ 2004 | Telephones<br>(‘000) | Teledensity<br>(%) | Internet Users<br>(‘000) |
|--------------------|-------------------------|-------------------------------|----------------------|--------------------|--------------------------|
| US                 | 298.21                  | 36273                         | 360347               | 122.71             | 185000                   |
| UK                 | 59.67                   | 26369                         | 94791                | 158.51             | 37600                    |
| Australia          | 20.16                   | 25436                         | 29880                | 148.25             | 14190                    |
| Brazil             | 186.41                  | 3338                          | 107987               | 59.78              | 22000                    |
| Mexico             | 107.03                  | 6328                          | 66974                | 62.58              | 18622                    |
| Sri Lanka          | 20.74                   | 1031                          | 4606                 | 22.20              | 280                      |
| Korea (Rep)        | 48.29                   | 14136                         | 62087                | 128.56             | 33010                    |
| Japan              | 128.08                  | 31324                         | 153525               | 119.86             | 64160                    |
| Indonesia          | 222.87                  | 1156                          | 59682                | 26.79              | 16000                    |
| China              | 1315.84                 | 1268                          | 743861               | 56.53              | 111000                   |
| Pakistan           | 153.96                  | 614                           | 18049                | 11.72              | 10500                    |
| India <sup>#</sup> | 111.59                  | 634                           | 142092               | 12.74              | 60000                    |
| World              | 6728.08                 | 5944                          | 3309379              | 49.45              | 964272                   |

Note: <sup>#</sup>As on 31 March 2006.

Source: International Telecommunication Union.

**TABLE 12.1.4**  
**Expansion of Telecom Network—Public and Private Operators and Fixed and Mobile**  
**(PSUs and Private Operators) during the Tenth Plan Period (2002–07)**

| Year<br>Ending<br>31 March | Public<br>(in<br>million) | Private<br>(in<br>million) | Fixed<br>Lines<br>(in<br>million) | Wireless<br>(in<br>million) | Total<br>Phones | Teledensity (%) |       |       | Rural<br>Phones<br>(in<br>million) | Urban<br>Phones<br>(in<br>million) |
|----------------------------|---------------------------|----------------------------|-----------------------------------|-----------------------------|-----------------|-----------------|-------|-------|------------------------------------|------------------------------------|
|                            |                           |                            |                                   |                             |                 | Rural           | Urban | Total |                                    |                                    |
| 2002                       | 38.17                     | 6.80                       | 38.29                             | 6.68                        | 44.97           | 1.21            | 12.20 | 4.29  | 9.04                               | 35.96                              |
| 2003                       | 43.18                     | 11.45                      | 41.33                             | 13.30                       | 54.63           | 1.49            | 14.32 | 5.11  | 11.41                              | 43.22                              |
| 2004                       | 46.48                     | 30.05                      | 40.92                             | 35.61                       | 76.53           | 1.57            | 20.74 | 7.02  | 12.27                              | 64.26                              |
| 2005                       | 52.08                     | 46.29                      | 41.42                             | 56.95                       | 98.37           | 1.73            | 26.88 | 8.95  | 13.57                              | 84.80                              |
| 2006                       | 61.07                     | 81.00                      | 40.22                             | 101.85                      | 142.07          | 1.86            | 39.45 | 12.74 | 14.77                              | 127.30                             |
| 2007                       | 71.39                     | 135.44                     | 40.78                             | 166.05                      | 206.83          | 2.83            | 55.94 | 18.31 | 22.66                              | 184.17                             |

Source: DoT.

Recognizing that the telecom sector is one of the prime movers of the economy, the regulatory and policy initiatives taken by the government during the Tenth Plan have been directed towards establishing a world-class telecommunications infrastructure in the country. This has led to a positive result in the sector and major objectives envisaged in the Tenth Plan were achieved to a great extent. Affordable and effective communication services could be offered as the tariff declined substantially due to intense competition among the operators.

12.1.7 During the Tenth Plan period, the Internet subscribers grew from 3.64 million in 2002–03 to 9.21 million in 2006–07. The broadband subscribers base stood at only 2.28 million connections (2006–07) from 1.8 lakh connections in 2004–05. One of the factors for such a low broadband subscriber base could be the pricing structure.

12.1.8 The number of telephones has increased from 44.97 million as on 31 March 2002 to 206.83 million as on 31 March 2007, exhibiting a CAGR of around 35.68%. The number of mobile phone/wireless subscribers increased from 6.68 million as on 31 March 2002 to 166.05 million as on 31 March 2007, exhibiting a CAGR of 90.15%. The number of Internet subscribers grew at 23%, while the broadband subscribers grew from a meager 0.18 million during the year 2004–05 to 2.28 million during the year 2006–07.

#### MOBILE VERSUS FIXED TELEPHONES

12.1.9 The preference for use of wireless phones has also been predominant in the sector. This is confirmed

from the rising share of wireless phones, which increased from 14.85% (6.68 million telephones) in March 2002 to 80.28% (166.05 million telephones) in March 2007.

#### TREND IN TELEDENSITY

12.1.10 Teledensity in the country is steadily increasing from 4.29% as on 31 March 2002 to 18.31% as on 31 March 2007. However, there is a wide gap between urban teledensity (55.94%) and rural teledensity (2.83%). In fact, the rural telephony has not kept pace with the impressive growth in the urban connectivity.

#### RURAL TELEPHONY

12.1.11 Apart from the 14.77 million fixed and wireless in local loop (WLL) connections provided in the rural areas, 564610 VPTs have also been provided. Thus, 90% of the villages in India have been covered by the VPTs. In addition, more than 2 lakh public call offices (PCOs) are also providing community access in the rural areas. Mobile Gramin Sanchar Sewak Scheme—a mobile PCO service—is also being provided at the doorstep of villagers. At present, 2772 GSSs are covering 12043 villages. Further, in order to provide Internet services, *Sanchar Dhabas* (Internet kiosks) have been provided in more than 3500 block headquarters out of the total 6337 blocks in the country.

12.1.12 The telecom network in the rural areas also expanded during the Tenth Plan (2002–07). The number of phones in the rural area has increased from 9.01 million in March 2002 to 22.66 million by March 2007. The rural teledensity increased from 1.21% in

March 2002 to 2.83% in March 2007. The bulk of the investment in rural telecom has been made by the public sector operator, viz., BSNL. The private operators have provided only 12665 VPTs by the end of March 2006.

#### REDUCTION IN TARIFF CHANGES

12.1.13 The Indian telecommunication sector has witnessed major changes in the tariff structure. The Telecommunication Tariff Order 1999, issued by Telecom Regulatory Authority of India (TRAI), started the process of tariff rebalancing with a view to bringing them closer to the costs. Further, increased competition in the telecom sector has also resulted in a substantial fall in the tariffs.

#### PERFORMANCE OF TELECOM EQUIPMENT

##### MANUFACTURING SECTOR

12.1.14 Steady growth has been observed in the telecom equipment manufacturing sector during the Tenth Five Year Plan period, as may be seen from Table 12.1.5.

**TABLE 12.1.5**  
**Performance of Telecom Equipment**  
**Manufacturing Sector during Tenth Plan**

(Rs Crore)

| Year    | Production | Export |
|---------|------------|--------|
| 2002-03 | 14400      | 402    |
| 2003-04 | 14000      | 250    |
| 2004-05 | 16090      | 400    |
| 2005-06 | 17833      | 1500   |

Source: Working Group Report for Eleventh Plan on Telecommunications sector, DoT.

12.1.15 Some of the major policy initiatives introduced in the telecom sector during the Tenth Plan period for giving a boost to the sector are as follows:

- National long distance (NLD) service was opened to operators w.e.f. 13 August 2002.
- National Frequency Allocation Policy 2002 was evolved.
- The monopoly of Videsh Sanchar Nigam Limited (VSNL) in International long distance (ILD) terminated on 31 March 2002.
- National Internet Backbone covering all States has been commissioned.
- Instruction issued to all State Governments to provide expeditious approval for right of way.
- Guidelines for Unified Access Service License regime were issued on 11 November 2003.
- Calling Party Pays (CPP) regime was implemented w.e.f. 1 May 2003, under which landline telephone users were to pay airtime charges apart from normal charges if the call was made to a cellular phone.
- Indian Telegraph Act was amended for establishment of USOF. Non-lapsable USOF was created on April 2002.
- Interconnection Usage Charge regime was introduced.
- Several directives/regulations have been issued by TRAI regarding different telecom services, their tariffs, quality and Internet services, which have contributed positively towards the growth of telecommunication sector.
- Internet Service Providers (ISPs) allowed setting up submarine cable landing stations for international gateways for Internet.
- Radio frequency (RF) spectrum management has been modernized and automated to efficiently address dynamic needs of the liberalized user.
- Broadband policy was announced on 14 October 2004.
- ISPs have been permitted to use underground copper cables for establishing last mile linkages.
- FDI ceiling has been raised to 74% for various telecom services.
- The operation of automated spectrum management was commenced in January 2005.
- Access service provider can provide Internet telephony, Internet services, and broadband services. They can use the network of NLD/ILD service.
- Prior experience in telecom sector is no more a prerequisite for grant of telecom service licenses.
- Annual license fee for NLD, ILD, Infrastructure Providers, VSAT Commercial, and ISP has been reduced to 6% of Adjusted Gross Revenue (AGR) with effect from 1 January 2006.
- Internet Protocol based Virtual Private Network service is permitted to ISPs.
- Delicensing has been done of 2.40–2.4835 GHz frequency band for indoor and outdoor use and 5.15–5.13 GHz frequency band for indoor use.

12.1.16 In addition to the above, certain exemptions/concessions have been given on the customs duty for important equipments as well as components, besides excise duty exemptions for benefit under indirect taxes.

### Investments during the Tenth Plan

12.1.17 During this period, the public sector operators, viz., BSNL and MTNL, as well as the private operators made major investments in cellular mobile segment. While PSUs account for 71.39 million connections (both fixed and mobile) as on March 2007, the private operators account for 135.44 million lines. More than 97% of the private sector lines are in the wireless category. The total estimated investments by the public sector operators during the Tenth Plan were Rs 39467.21 crore.

### BROAD OBJECTIVES AND THRUST AREAS IN TELECOM SECTOR DURING THE ELEVENTH PLAN

12.1.18 Keeping in view the targets for the telecom sector, the Eleventh Plan has been formulated accordingly. Basically, the approach will be towards achieving faster, broader, and inclusive growth. Further, keeping in view the digital divide, special attention will be paid to enhance the rural connectivity. The broad objectives for the telecom sector during the Eleventh Plan period (2007–12) will be as follows:

- To reach a telecom subscriber base of 600 million.
- To provide 200 million rural telephone connections by 2012, that is to reach a rural teledensity of 25%.
- To provide telephone connection on demand across the country at an affordable price.
- To reach a target of 20 million broadband connections and 40 million Internet connections by 2010 as envisaged in Broadband Policy 2004.
- To provide broadband connection on demand across the country by 2012.
- To provide Third Generation (3G) services in all cities/towns with more than 1 lakh population.
- To facilitate introduction of mobile TV.
- To provide broadband connectivity to every secondary school (SS), health centre, GP on demand in two years.
- To make India a hub for telecom equipment manufacturing by facilitating establishment of telecom specific SEZs.

12.1.19 Establishing centres of excellence in premier educational institutions and other reputed organizations in the country in PPP mode. The centres can focus on emerging areas such as Next Generation Networks (NGN), Wireless Broadband, Telecom Network Security, etc. Special intervention is required to connect rural areas for providing voice and data connectivity.

### Targets in Telecom Sector during the Eleventh Five Year Plan

12.1.20 In consonance with the above objectives, the broad targets identified by the DoT for the Eleventh Plan period are given in the following paragraphs.

#### 12.1.21 Network Expansion and Rural Telephony

- One telephone per three rural households by 2007 (about 50 million rural connections).
- One phone per two rural households by 2010 (about 100 million rural connections).
- 200 million rural connections by 2012 (i.e. a rural teledensity of 25%).
- For rural telephony network expansion the strategies will be to provide individual access: (i) through market forces for viable areas and (ii) USOF for non-viable areas.
- For providing public access in rural areas, USOF will be provided for (i) VPTs; and (ii) Rural Community Phones (RCPs).
- For rural telephony the infrastructure will be shared at least amongst three service providers.
- To support for development of general telecom infrastructure in rural areas, initially pilot projects would be undertaken for the same.

#### 12.1.22 Broadband Coverage

- Broadband coverage for all secondary and higher secondary schools is stipulated by 2007.
- Broadband coverage for all public health care centres is stipulated by 2007.
- Broadband coverage for all GPs is stipulated by 2010.
- Linkage is to be provided between block headquarters and nearest exchange for completing State-wide area networks (SWANs) connectivity.

- Existing infrastructure of rural exchanges and OFC will be used.
- Wireless technology will be deployed.

### 12.1.23 Manufacturing and R&D

- Making India a hub for telecom manufacturing by facilitating more and more telecom specific SEZs.
- Providing platform for export promotion of telephone equipment and services by setting up Export Promotion Council.
- Promoting R&D in key and emerging technologies appropriate for the country as well as in the area of telecom network security.

12.1.24 The DoT has proposed to take up the following programmes/initiatives during the Eleventh Five Year Plan period:

- Identify and make available adequate spectrum for both expansion of network and introduction of new value-added services.
- Setting up of Telecom Testing and Security Certification Centre (TETC).
- Setting up of Centre for Communication Security Research and Monitoring.
- Setting up of NGN Laboratory.
- Undersea cabling between Mainland and Andaman & Nicobar (A&N) Islands.
- Modernization of Radio Spectrum Monitoring Capabilities.
- Promote induction of new technologies at Indian Telephone Industries.
- Setting up of Telecom Export Promotion Forum/Council for promotion of export of telecom services.

### Projection of Investment in Telecom Sector for the Eleventh Plan

12.1.25 The public sector investment in the telecommunication sector (through BSNL and MTNL) would be mainly funded through IEBR to the tune of Rs 80753.00 crore at 2006–07 price and Rs 89581.56 crore at current price (including Rs 337.47 crore by C-DOT as internal resources) over the Eleventh Plan period. It is assumed that the private investment in this sector will also grow substantially. The total investment in the telecommunication sector during the Eleventh Plan period is projected at about Rs 231000 crore.

### KEY CONSTRAINTS AND CHALLENGES

12.1.26 Some of the major constraints and challenges being faced by the Indian telecom sector are:

- RF spectrum being a limited resource, with competing and increasing demands, there is a need to have optimal and efficient use with greater sharing of this resource by all stakeholders. Therefore, effective RF spectrum planning has to be carried out for short term, medium term, and long term, taking into account the emerging new technologies.
- Although a teledensity of 18.31% has been achieved, there exists a wide gap between urban teledensity (55.94%) and rural teledensity (2.83%). Considering the fact that 70% of the population lives in rural areas in India, the real challenge will be to connect rural India.
- As voice-based connectivity (telephony) alone may not be the best economically viable option. Therefore, the connectivity should predominantly be data based having killer applications to make it sustainable on which voice services can also be provided.
- For an effective roll out the rural broadband connectivity would also need support through the USOF.
- To accelerate broadband connectivity, equipments need to be made available at an affordable price. In addition, local content in local languages need to be developed.
- The transformation of traditional public telecommunications networks into Internet Protocol (IP) based NGN will require significant technical, human, as well as financial resources. Further activities relating to migration to Internet Protocol version-6 will have to be given priority, in order to spread Internet much faster.
- Communication network needs to be adequately protected for which necessary network security related initiatives need to be put in place.
- The slow growth of telecom manufacturing sector is an area of major concern. The NTP 1999 sought to promote exports of telecom equipments and services. But till date export of telecom equipment remains minimal. Most of the state-of-the-art telecom equipment including mobile phones are imported from abroad. There is thus an immense potential for indigenous manufacturing in India.

### Policy Issues

12.1.27 In order to achieve the targets laid down in telecom sector for the Eleventh Five Year Plan, proper and conducive policy initiatives need to be introduced by the government in its various sub-sectors, such as Rural Network Expansion, Broadband and Internet, Telecom Equipment Manufacturing, Telecom R&D, etc. The broad policy initiatives envisaged in this regard may be as follows:

- It is absolutely essential to carry out appropriate re-farming of the RF spectrum keeping in view the needs of various sectors. Further, some amount of spectrum may have to be kept reserved for deploying new services including rural broadband, 3G, Voice over Internet Protocol (VoIP), etc. While allocating spectrum the international practices should be kept in view, so that India can take advantage of the economies of scale. Bringing in a regime of unified licensing could also be considered for most efficient utilization of the allotted spectrum.
- It is essential to promote sharing of infrastructure by the service providers and incentivizing such sharing so that overall costs can be kept down. This is also expected to accelerate the pace of rural penetration of the telecom networks.
- Special attention needs to be paid to the most backward and remote areas such as, the North East, J&K, tribal belts, and island authorities. Cost may not be a consideration, while providing connectivity to these areas.
- Suitable policy initiatives need to be introduced for promoting telecom equipment manufacturing in the country. Further, there should be a co-ordinated approach to promote PPPs for R&D activities in telecom equipment. In addition, initiatives such as formation of common product certification to International Standards and Testing Facility for Global Accreditation, setting up of Mega Fabrication Units (FAB) facility for the manufacture of Integrated Circuits (IC), Development of Hardware Manufacturing Cluster Parks (HMCPS), etc., also need to be taken up to make India a telecom equipment manufacture hub.
- Adequate and availability of international and national bandwidth at low cost also need to be

ensured through appropriate technologies and policy interventions.

### Special Issues in Successful Roll Out of Rural Telephony and Broadband

12.1.28 As has been observed that in spite of substantial achievements in telecom sector during the Tenth Plan period, the rural teledensity continues to be very low as compared to the present national average of 18.31%. The mobile telephony costs are one-fifth of the fixed line costs. The low penetration of cellular mobile services in the rural areas so far can be attributed to inadequate infrastructure, in the form of towers and power supply, as well as lower revenue potential. However, with mobile tariffs falling, there is a likelihood of huge demand for mobile telephones in rural areas. But for successful rural roll out of mobile telephones, unless there is adequate coverage of towers and other related infrastructure, the demand cannot be met.

12.1.29 The government has introduced a scheme for expansion of rural mobile infrastructure through creation of shared passive infrastructure under USOF. Moreover, rural telecom expansion needs to be facilitated through setting up of triple play networks (viz. 3G networks) to deliver multiple services (i.e., voice, data, and video) at viable prices and bridge the information divide in rural areas. Through such networks, a single operator would be able to deliver various services to subscribers on a single medium.

12.1.30 Thus, for the successful roll out of telephones and broadband in the rural areas the following aspects should be considered by the policy makers and other stakeholders on priority basis: (i) proper infrastructure for access to telecom network; (ii) suitable access devices; and (iii) proper and adequate content. Ultimately, for any service to be useful, it should have value for the consumer. Therefore, the rural service should have adequate and relevant content. Each category of consumers has different needs and assigns different value to the various content and services being offered. Therefore solutions regarding content and services for high-end consumers, the middle class in cities and towns, the mass market, and rural users need to be considered separately. As such, there will be a need to develop large numbers of content providers,

particularly RCPs including local language content providers, for which proper training courses may be designed and implemented through various existing institutions. Further, proper policy initiatives should be put in place to regulate the content effectively as per existing standards.

#### NEW INITIATIVES IN TELECOMMUNICATION SECTOR

12.1.31 It has been seen that broadband/bandwidth penetration has a multiplier effect on the economy. Experience in other countries has shown that broadband penetration has a positive correlation with the national income.

12.1.32 Bandwidth is an essential ingredient for carrying signals in today's information-based economy. It is a fact that despite nearly 850000 route km of OFC infrastructure, the geographical availability of the bandwidth remains poor in as much as the rural and remote areas which constitute bulk of the nation and continue to suffer from poor availability and expensive bandwidth. Many countries are putting in place national strategies for broadband promotion. In India, with the liberalization of telecom sector, broadband access has been driven largely by the private sector. The government has set a target for 20 million broadband and 40 million internet users (connections) by 2010. For this to happen, the PC penetration has to be substantially increased by way of suitable policy interventions both fiscal and non-fiscal.

12.1.33 India is poised with many interventions such as e-governance, rural connectivity, and e-education leading to creation of the bandwidth capacity which is also likely to increase the penetration of personal computers (PC), Internet, and broadband users. The bandwidth requirements would be in excess of 10 terabits per second (Tbps), of which at least 2000 gigabits per second (Gbps) (2 Tbps) would be the international bandwidth requirements. Keeping in view such a large bandwidth requirement there is a need to put in place appropriate policy initiatives such as:

- **Pricing Policy:** India is a highly price-sensitive market. If the price is right then the acceptance of a service or goods is very high, and the telecommunications market has amply proven this fact.

Bandwidth, if looked at as a commodity, needs to be priced rightly for bringing in the desired off-take. Reselling of bandwidth for domestic usage should be allowed which is one of the best ways to create competition and roll out of infrastructure.

- **Fiscal Policies:** The following aspects need to be considered:
  - Encourage availability of low-cost access devices.
  - Decrease duties on items used in broadband networks and equalize duties on inputs for domestically manufactured goods with those on finished imports.
  - Provide appropriate tax structure to enable growth, without having to forego significant revenue.
- **Co-ordination between PSUs:** BSNL should be encouraged to co-ordinate with the consortium of PSUs—POWERTEL, GAILTEL, and RAILTEL—to identify clearly the additional villages that could be provided broadband connectivity by utilizing the latter's network due to the nature of coverage provided by their network. Suitable financial incentives should be worked out by the USO Administrator to facilitate this programme.

#### Introduction of New Value-added Services

- Over the last decade, television landscape has undergone a sea change. Now, Internet Protocol Television (IPTV) has arrived, which uses point-to-point connection as compared to broadcast connection and uses multi-casting techniques to give broadcasting effect. Since it is a point-to-point connection similar to the normal voice and data connections, it leads to converged provisioning of voice, video, and data—referred to as triple play—through a single medium. IPTV can be provided by cable TV service operators as well as telephony service operators. In fact, IPTV is widely regarded as the killer application for broadband particularly in the rural areas. This would also help in making the Common Service Centres (CSCs) more viable.
- Mobile TV is yet another technology which permits integration of mobility with TV viewing. Since the hand-held device used for mobile TV reception can also be used for normal voice and data communication, this technology represents a four-way convergence referred to as quadruple play. The use of

services such as 3G for video transmission should bring in mobile TV in the normal course. However, the alternative approach promises great advantages since it uses broadcast technology for video reception at a frequency other than the one used for voice and data applications, such as the FM radio on handsets.

- On the regulatory and pricing front, there will be a need for the down-linking guidelines to be modified to permit broadcasters/content providers to provide their content to IPTV and mobile TV service providers also. The technology enables the service providers to add their own content also on these platforms. Therefore, there will also be a need for regulatory mechanism to regulate the content on the IPTV and mobile TV.

### The Path Ahead

12.1.34 In order to ensure further accelerated development in the telecom sector during the Eleventh Five Year Plan, the following aspects will have to be considered:

- The overall focus of the Eleventh Five Year Plan, in respect of telecom, would be on evolving a strategy for the development of world-class infrastructure for supporting accelerated growth of all sectors, bridging the digital divide, an optimum utilization of spectrum, focus on policy recommendations for promotion of private sector investment including FDI, and to take suitable initiatives for improving the performance of telecom equipment manufacturing sector.
- Availability of local content and applications is an important constituent for overall growth of Internet and broadband services. For achieving these goals following major steps may have to be undertaken: (i) facilitation for creation of multimedia and video content in the country; (ii) devising proper incentive for development of regional and local language content; (iii) thrust to the development of content and application for e-governance, e-education, e-health.
- Effective promotion and diversified use of shared rural broadband infrastructure to provide new opportunities, augment income, promote overall development in the areas of tele-education, tele-medicine, and e-governance.

- Online retail in a broadband environment may be promoted. The role of other facilitators such as electricity authorities, Department of IT of various State Governments, department of local self-governments, Panchayats, Department of Agriculture, Department of Health and Family Welfare, Department of Education, needs to be properly co-ordinated, so that these departments/organizations/agencies can carry forward the advantages of broadband services to users particularly in rural areas.

12.1.35 The GBS for the Eleventh Five Year Plan of the DoT has been tentatively fixed at Rs 1549 crore at 2006–07 constant price (Rs 1752 crore at current price) and Rs 79204 crore of IEBR at 2006–07 price (Rs 89582 crore at current price).

## 12.2 INFORMATION TECHNOLOGY

### OVERVIEW

12.2.1 Information Technology has contributed tremendously to the progress of our country and provided great leadership to Indian enterprise and creativity in the past decade. Breakthroughs in technology and innovative applications have brought vast benefits to various sectors and sub-sectors of the economy of the country. The entire gamut of IT-related services—including software and services, data and business processing services, and IT-enabled services—have emerged as a large knowledge-based sector of our economy. The industry has not only come into its own, both in terms of investment and employment, but is also having a positive knock-on effect on other manufacturing and services sectors. It is contributing to increased productivity and competitiveness across a wide range of activities. We have a dynamic entrepreneurial class that has gained confidence in its ability to compete, with skilled professionals and excellent management capability. Today, a majority of the companies in India have already aligned their internal processes and practices to international standards.

### REVIEW OF THE TENTH PLAN

#### IT Software (Domestic Segment)

12.2.2 The domestic IT market in India was valued at approximately Rs 54000 crore in 2006. This segment

has grown at a CAGR of 19.7% over the past six years.

### Policy Reforms Introduced and New Initiatives

12.2.3 Some of the major policy initiatives introduced as well as other programmatic initiatives taken by the Central and various State Governments in the IT sector during the Tenth Plan period are given in Boxes 12.2.1 and 12.2.2.

### National Informatics Centre (NIC)

12.2.4 NIC is a nodal S&T organization providing e-governance network and technical support to the Central Government, State Governments, UTs, and about 600 district administrations in the country. It has been facilitating the process of e-governance in the country for the last 30 years.

### IT Hardware Manufacturing

12.2.5 Hardware manufacturing has been recognized as one of the engines for economic growth and creation of wealth. India's manufacturing competitiveness is

because of the factors such as low-cost labour and the talent pool of three million graduates passing out of universities every year. Also, the raw material is one of the richest sources of our country. The electronics production and electronics export of various sectors of IT hardware and software in the Tenth Five Year Plan are given in Annexures 12.2.1 and 12.2.2. The overall annual growth in electronics hardware production was 15%–16%. The exports constituted about 16% of the total production.

### Human Resource Development in IT

12.2.6 India has been developing as a major hub in knowledge creation in IT and electronics in the global arena. The number of professionals employed in this sector had grown to 1.28 million by 2005–06.

### Nanotechnology

12.2.7 Nanotechnology is widely regarded as the next technological revolution. It has attracted the attention of scientists, researchers, and technologists all over the world and is likely to have a profound effect on almost

#### Box 12.2.1 Major Government Initiatives

- **NeGP:** The NeGP unveiled by the government covers 27 MMPs and 8 support components which are to be implemented at Central, State, and local government levels, at an estimated cost of Rs 23000 crore.
- **SWANs:** The scheme envisages establishment of SWANs across the country in all 29 States and 6 UTs from State headquarters up to the block level with a minimum bandwidth capacity of 2 Mbps, at a total cost of Rs 3334 crore.
- **Community Information Centres (CICs):** CICs numbering 487 in the North Eastern States, 135 in Jammu and Kashmir, 41 in A&N Islands, and 30 in Lakshadweep Islands have been established at a total cost of Rs 305 crore and are providing e-governance services and training to the local populace effectively.
- **Common Service Centres (CSCs):** The scheme envisages establishment of more than 100000 CSCs across the country at a total cost of Rs 5742 crore. The CSCs will be established in a honeycomb pattern covering all the 600000 villages in the country for delivery of content and services such as e-governance, education, entertainment, telemedicine, agriculture, etc.
- **Project Relating to Spatial Data Infrastructure for Multi-Layered GIS for Planning:** Starting with village as a unit, multi-layered databases would be developed in stand-alone GIS, distributed GIS, and web-based network-centric GIS environments to demonstrate the benefits of GIS at various levels of planning and decision making.
- **Computer-aided Digital Mapping Project for Six Cities—Ahmedabad, Bangalore, Chennai, Hyderabad, Kolkata, and Mumbai:** The benefits of the project include better services to citizens at large and better preparedness for disaster management. This project involves preparation of digital maps along with the digital mapping of utilities such as water, sewage, electricity, roads, communications, gas, pipelines, etc.
- **Semiconductor Industry/FAB:** The time is ripe to make India a preferred destination for the manufacture of semiconductors and associated devices. The government has issued a notification in March 2007 relating to the Special Incentive Package for setting up of semiconductor fabrication and other micro and nanotechnology manufacture industries in India.

**Box 12.2.2**  
**Indicative List of Successful Initiatives in the States**

| Project   | Initiative of Government of   |
|---|---|
| Computerization of the Registration Department: CARD, HIMRIS, STAR, PRENA, SCORE, SARITA, KAVERI, TRIS, DASTAVAZ, ORCHID, PRISM | AP, Himachal Pradesh, TN, UP, Bihar, Maharashtra, Karnataka, Tripura, Delhi, Sikkim, Punjab |
| Computerization of Transport Department: SARATHI AND VAHAN  | About 500 RTOs/DTOs in various States   |
| Computerization of district administration and Citizen Centric Services: PRAGATI, AKSHAYA, LOKVANI, NAIDISHA, SUWIDHA           | Assam, Meghalaya, Kerala, UP, Haryana, Punjab   |
| Back-end PRI Solutions: INFOGRAM, e-gram, e-Panchayat, Asthi, Panchlekha, etc. (village Panchayat)                              | Goa, Gujarat, AP, Karnataka, MP, etc.   |
| Computerization of Land Records: BHOOMI, TAMILNILAM, BHULEKH, DHARITRI, BHUMI, APNAKHATA, BHUYAN, DEVBHUMI, HIMBHOO MI          | Karnataka, TN, MP, Assam, WB, Rajasthan, Chhattisgarh, Uttrakhand, Manipur, Haryana         |
| HALRIS (Integration of property registration and land records administration)   | Haryana   |
| NREGSoft (Online Monitoring of NREGS)   | All States  |
| Computerization of Treasuries: e-KOSH, Koshvahini   | Rajasthan, Chhattisgarh, Maharashtra, UP, Manipur, Haryana, Kerala, Himachal Pradesh        |
| e-Municipality  | Maharashtra   |
| Monitoring of Construction of Permanent Shelters for Earthquake and Tsunami Victims   | A&N Islands   |
| Employment Exchange   | Lakshadweep, Gujarat  |
| Common Integrated Police Application  | Around 1800 police stations across States   |
| e-Courts (court orders, cause list, e-filing in Supreme Court)  | Supreme Court, 21 High Courts; being extended to 13000 subordinate courts in States         |
| Passport System   | Passport offices in States  |
| VAT (Value-added Tax Computerization)   | WB, Sikkim, Haryana   |
| AGMARKNET   | 2800 Agricultural <i>Mandis</i> in various States   |
| National Panchayat Portal   | Portals of all PRIs across the States   |
| PRIASoft (PRI accounting software)  | Orissa, MP, etc.  |
| RuralBazar (Web store to promote marketing of Rural Products)   | TN, Goa, Tripura, etc.  |
| RuralSoft (Information systems for Poverty Alleviation Schemes)   | UP, Orissa, AP, etc.  |
| Rural Water Supply & Sanitation/PHED Computerization  | Arunachal Pradesh, UP, MP, AP, Rajasthan, TN, etc.—20 States                                |
| Open e-NRICH (Community Software Solution Framework and Content Management System)  | Kerala, North Eastern States, Bihar, etc.   |
| e-post  | Post Offices in States  |
| Instant Money Order   | Post Offices in States  |
| COIN (Co-operative Bank Information Network)  | Bihar   |
| CONFONET-Computerization and Networking of Consumer Forums  | All States  |
| Integrated Information System for food grains management  | All States  |

all industry sectors and application areas. India started R&D funding in the area of nanotechnology during the Tenth Plan and projects relating to nano-electronics with a total outlay of about Rs 127 crore have been initiated.

### VISION AND STRATEGY FOR THE ELEVENTH FIVE YEAR PLAN

12.2.8 The Eleventh Plan Vision for the Information Technology sector envisages newer technology development, entrepreneurship, and innovation. Building on the existing strengths and base in the software sector, we need to address the shortage of trained human resource, bridging the digital divide, and strengthening the IT hardware manufacturing base in the country so that India emerges as a regional hub for hardware manufacturing and exports. Our software industry needs to move up in the value chain from services to product development and create IPR.

12.2.9 Appropriate strategies encompassing fiscal and non-fiscal initiatives would need to be introduced in a co-ordinated manner to enable India to become world leader in IT software and services including ITES and become a regional hub for IT and electronics hardware manufacturing. Taking advantage of the demographic dividend, we need to create a bank of highly trained manpower not only to meet the domestic requirement but also for the rest of the world.

### Policy Issues, Programme Reforms, and New Initiatives in the Eleventh Plan

12.2.10 The Eleventh Plan objective of faster and inclusive growth calls for many new initiatives, namely, creation of integrated modern townships across the country for IT industries, formulation of proactive IT-electronics hardware manufacturing policy, development of trained manpower to meet the requirement of the industries on a continuous basis, and promoting R&D in few selected niche areas wherein we have the ability to become global leaders. Another important area which needs acceleration is the NeGp for providing all government services to the common man in his locality through common service delivery outlets and ensuring efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man. Issues of re-engineering

and management of change are of paramount importance in comparison to technical issues associated with e-governance.

12.2.11 The demand for hardware is expected to grow at a rate of 30%, as against 18% at present. This would be fuelled by the aspirations of the younger generation and the large middle class with increasing disposable incomes in India. By the year 2010, the hardware market is expected to be of the order of US\$ 85 billion. If the hardware production continues to grow at the present growth rate, there would be a large gap between demand and supply, which will have to be met through imports. In this scenario, we will approach a situation wherein foreign exchange outgo on account of import of hardware could be more than the foreign exchange earned by the country through export of software and services. In addition, this sector has the potential of generating large employment opportunities. Keeping this in view, electronics/IT hardware manufacturing has been identified as a thrust area. Major policy intervention on priority basis is required to promote the growth of Electronics/IT Hardware Manufacturing Industry so as to meet the growing demand.

12.2.12 **Semiconductor Manufacturing Industry:** With increasing demand for domestic electronic goods and the availability of a pool of talented engineers, India is fast creating a footprint in the semiconductor area. The Indian semiconductor industry is currently dominated by players engaged in chip designing activities. India must compete aggressively by adopting a coherent strategy for building up a semiconductor fabrication facility. The electronic goods manufacturers would create a substantial demand for IC in the country. The fabrication facility would help reap benefits for the nanotechnology industries in the coming years. FAB would cater not only to the domestic market, but the country would also be able to reach out to the global semiconductor market in specific product categories. A special incentive package has been announced for setting up of semiconductor fabrication and other micro-technology and nanotechnology manufacturing industries in India which is expected to fuel further growth of semiconductor manufacturing in India.

### SETTING-UP OF INTEGRATED MODERN TOWNSHIPS FOR SUNRISE INDUSTRIES INCLUDING IT AND BPO

12.2.13 IT industry lends itself for easy mobility, and with the large number of educational institutions coming up across the country, there is a need to move the IT-ITES/BPO industries to tier-2 and tier-3 cities for promoting inclusive growth. In addition, it is also important to create 'Information Technology Investment Regions' for setting-up Integrated Modern Townships for Sunrise Industries including IT/ITES/electronic hardware in the country.

### CYBER SECURITY

12.2.14 As IT infrastructure is increasingly becoming a substratum of all economic activities, the operational stability and security of critical information infrastructure has become vital for economic security of the country. This calls for concerted efforts from the government, the industry as well as the service providers to secure their IT infrastructure. Following organizations are presently dealing with the cyber security issues in the country.

#### INDIAN COMPUTER EMERGENCY RESPONSE TEAM (CERT-IN)

- CERT-In is a functional organization with the objective of securing Indian cyber space. It provides incident prevention and response services as well as security and quality management services, and creates awareness on security issues through dissemination of information on its website and operates 24 × 7 Incident Response Help Desk. Its activities comprise handling of security incidents, issuing of e-security alerts, publishing of advisories, vulnerability notes; and security guidelines, tracking of Indian website defacements, etc.

#### GOVERNMENT DEPARTMENTS SECURITY

- NIC, the e-governance support organization for government departments, has been taking various security measures for providing secure IT environment. These include data centre security, user systems security, security polices and procedure, and regular security audits for compliance checking. The data centre security comprises network firewall, intrusion prevention systems, application firewalls, Secure Sockets Layer (SSL)/Virtual Private Network

(VPN) security, etc. The application security audit is conducted on any new application before it can be hosted. Besides, antivirus and software patch management is ensured for the servers and desktop systems all over National Informatics Centre Network (NICNET). Continuous security monitoring of network is done.

#### REGIONAL CYBER SECURITY RESEARCH CENTRE (RCSRC)

- NASSCOM in association with Chandigarh Administration has established an RCSRC to deal with all cyber security issues in collaboration with the IT industry. The Centre will aid and advise organizations in cyber security policy enforcements, conduct of security audits and incident handling. It will also provide various IT organizations and the police department, consultancy for design of secure networks, including deployment of security administration software such as intrusion detection, management of security software, and vulnerability checking, protection against port scanners, password crackers, and other issues.

#### HIGH PERFORMANCE COMPUTING

12.2.15 High performance and grid computing is the next generation of computing facilities which would be widely used in a number of areas such as solving newer class of mathematical problems of various complexities, high energy physics, nuclear physics, climate science, structural biology, enzyme catalysis, genomics, bioinformatics, etc. The objective of grid application is to share the computational power across the grid by the members for enhanced service delivery and enable fast data access. There is a need for developing high-speed backbone connecting the computers on the grid, development of application software, and capacity building through R&D and training of required human resources.

#### TECHNOLOGY DEVELOPMENT IN INDIAN LANGUAGES

12.2.16 India is a multilingual country. There is, therefore, a need to provide user-friendly and cost-effective tools, applications, and content that enable access to ICT infrastructure in Indian languages. The issues relating to linguistic data resource, content

creation, language processing tools, and such technologies as optical character recognition, text-to-speech, speech recognition, cross-lingual information retrieval, and machine translation in multilingual environment are being addressed. To make available the fruits of IT development to the common man, fonts and software tools for some of the Indian languages such as Hindi, Tamil, Telugu, Assamese, Kannada, Malayalam, Marathi, Oriya, Punjabi, and Urdu have been released in public domains. There is need for developing similar software tools and fonts for other languages in the coming years.

#### DIGITAL LIBRARY OF INDIA

12.2.17 Digital library offers many advantages over the traditional libraries. Having no physical boundaries and space constraints, the digital libraries are available round the clock with multiple accesses at multiple locations in a most cost-effective way.

12.2.18 The Digital Library of India, hosted by the Indian Institute of Science, Bangalore, provides free access to many books in English and Indian languages and has digitized more than 2.97 lakh books containing a total of approximately 80.7 million pages till September 2007. Similarly, other digital libraries, which are mostly accessible to their own members, have been in existence at many locations in India as well as in many other countries. Therefore, the main initiative, in addition to digitization and preservation of data available in physical form, should be the integration of all the digital libraries all over the world so that all significant literary, artistic, and scientific works of mankind will be made available in every corner of the world for the education, study, and appreciation of our generation as well as that of all our future generations.

#### OPEN TECHNOLOGY CENTRE (OTC)

12.2.19 To facilitate use of open technologies in e-governance and strategic applications and services, OTC has been set up at Chennai. It has provided DSpace, an open-source archival solution, for archival of speeches, video, and audio speeches of Members of Rajya Sabha. It has enabled to archive documents of speeches in Urdu and Hindi in addition to English.

#### LIBRARY AUTOMATION

12.2.20 e-Granthalaya has been developed by NIC as standardized and robust library automation software. Already implemented in about 1000 libraries, it is going to be rolled out to a large number of libraries in the country.

#### CREATION OF A NATIONAL KNOWLEDGE NETWORK

12.2.21 A National Knowledge Network can go a long way in bringing India in the forefront of education, S&T, innovation, etc. National Research and Education Networks are driving the pace of collaboration, innovation, and discovery amongst scientists. Some of the major initiatives required in this direction include:

- Creation of a suitable mechanism for setting up and operating a National Knowledge Network.
- Connecting all major R&D establishments, Central institutions, universities, colleges, and libraries by using a dynamically configurable national multi-gigabit backbone network.
- Empowering campuses through wireless network.
- Having a Central Data Centre with 30 terabyte storage, capable of expanding to petabyte storage in future.
- Create a National educational portal which could host free educational content for e-learning.

#### SCHOOL CONNECTIVITY

12.2.22 Education infrastructure needs to be strengthened and upgraded. In the first phase, broadband access needs to be provided to every school. There are 108000 government and government-aided schools in India. All these schools need to be put on the network progressively.

#### INCREASING EFFICIENCY OF E-GOVERNANCE INVESTMENTS

12.2.23 The following initiatives would need to be taken up for accelerating the National e-governance programme:

- Encourage the Central and State Governments to procure e-governance services.
- Fast replication of already successful e-governance programmes.

- Make digital signatures mandatory for e-commerce, e-government, and e-banking initiatives.
- Identify and develop 'Killer Applications'—Online auctions, e-voting, home banking, etc.
- Speedy and effective implementation of various MMPs under the NEGP.
- Promotion of technologies such as Digital Subscriber Lines (xDSL), Wireless Fidelity (WiFi), and Worldwide Inter-operability for Microwave Access (WiMAX) for providing the last mile connectivity to the places where copper wiring is not possible.
- Technologies such as Broadband on Power Lines should also be explored.

#### THRUST AREAS FOR R&D IN IT SECTOR IN THE ELEVENTH PLAN

12.2.24 R&D in identified thrust areas is one of the major functions of the DIT. This support has helped in building infrastructure and competencies at a large number of academic and research institutions, and has produced the required manpower to take up R&D in the industry besides development of various products and packages. Some of the major thrust areas for R&D in the Eleventh Plan include: ubiquitous computing, RFI, high performance computing, grid computing, high performance networking, bio-informatics, open source software, software engineering, web technologies, and electronics— nanotechnology, photonics, microelectronics, industrial electronics, automation electronics, embedded systems, and electronics material development program.

#### CONVERGENCE OF BIO-INFO-NANO TECHNOLOGIES AND COGNITIVE SCIENCE

12.2.25 Information technology and communication technology have already converged leading to ICT. Information technology combined with bio-technology has led to bio-informatics. Now, nanotechnology is knocking at our doors. It is the field of the future that will replace microelectronics and many other fields with tremendous application potential in the areas of medicine, electronics, material science, etc. Convergence of bio-nano-info technologies can lead to the development of nano-robots. Likewise, a new revolution is also expected to be ushered in by the convergence of bio-info-nano technologies with the cognitive science in the coming years.

#### ICT Measurement for Knowledge Economy

12.2.26 The GoI has set up the National Statistical Commission with a wide ranging mandate to serve as a nodal and empowered body for all core statistical activities in the country and to evolve, monitor, and enforce statistical priorities and standards and to ensure statistical co-ordination among the different agencies involved. The Commission was formally constituted in July 2006.

12.2.27 This has enhanced the need for credible and timely data on ICT. The ultimate aim of collecting ICT statistics and indicators is to inform policy makers about the impact of ICT on the economy and the society. For this to be possible, data need to be collected not only on the ICT industry but also on how ICT is used by people, business, and the public administration. Therefore, there is a need to shift the emphasis a bit from measurement of the ICT industry to measuring the use of ICT across the economy in the Eleventh Plan.

12.2.28 In order to address this emerging need in the Eleventh Plan following course of action may be considered:

- Conduct model surveys of ICT usage by households, individuals, and businesses, including e-commerce and e-business.
- Study impact of ICT: What does ICT do for the economy?
- Pursue international co-operation and the partnership on measuring ICT for development.

#### Constraints and Challenges

12.2.29 Some of the key constraints and challenges being faced by the IT and hardware manufacturing sector in the country are as follows:

##### SMALL SIZE/SCALE OF OPERATIONS

- The size and scale of operation of most manufacturing plants are very small compared to the global market leaders. This leads to poor economies of scales for manufacturing as well as for sourcing. Lower capacities translate to higher per unit overheads. Even though the cost of labour in India is low, it fails to offset the adverse impact of poor economies of scale.

**HIGH RATE OF TECHNOLOGICAL OBSOLESCENCE**

- Due to the changes in technology, newer methods get introduced, calling for modern processes and equipment, which give a competitive advantage in terms of cost, speed, and quality. Yet, Indian companies find it unviable to upgrade before the investments in earlier equipment are recovered.

**UNIFICATION OF MANUFACTURING**

- With rapid convergence of consumer electronics, IT, and telecom and fast introduction of newer products in the market, new vistas for the manufacture of accessories to support the new gadgets are emerging. Therefore, unification of product categories has to be attempted for manufacturing.
- There appears to be lack of credible and timely data on ICT usage (e-Stat) and its impact on the economy.

**The Path Ahead**

12.2.30 The future of IT industry in India looks extremely positive. The government aims to start many new initiatives in this Eleventh Five Year Plan and strengthen the already running schemes. Some of the important initiatives in addition to those enumerated above that would help in reaching the goal of faster and inclusive growth are as follows:

- Encourage the adoption of e-procurement model in all government procurements.
- Encourage State Governments to initiate major citizen-centric mission projects under NeGP, preferably in the PPP mode.
- Promote electronics/IT hardware manufacturing industry as it is one of the thrust areas of the GoI.
- Policy needs to be put in place to set up HMCPs in private sector or public sector or PPP and to co-locate the inter-dependent units in the same complex.
- Policy need to be drafted to address the different issues related to the National Digital Library.
- Operationalize the Unique Identification Project to create a core database (using the most reliable pre-existing digitized database) which is then regularly updated and is easily accessible to and used by all

departments for identification of residents in the country for various purposes.

- Initiate MMPs and projects for developing quality human resource which is industry ready.
- Initiate programmes for development of quality faculty.

12.2.31 The GBS for the Eleventh Five Year Plan of the DIT has been tentatively fixed at Rs 11048 crore at 2006–07 constant price and Rs 12496 crore at current price.

**12.3 INDIA POST****OVERVIEW**

12.3.1 Post office is the only institution in the country which touches every person's life. A prompt and efficient postal system is very important for the development of a country. On one hand it provides personal services to the people, and on the other it also provides service to businesses which is crucial for the growth of the economy. The importance of Postal Services becomes all the more important when a USO Fund is created by the government.

12.3.2 With the emergence of private sector as a player in the areas of courier service and express service and with the development of information technology applications in every field, the posts stand to face competition. The basic profile of the sector is given in Box 12.3.1.

**REVIEW OF THE TENTH PLAN**

12.3.3 The Tenth Plan basically aimed at making the postal services self-sufficient. The major objectives envisaged for the Tenth Plan were (i) provision of universal postal services at affordable prices, (ii) ensuring quality of services at par with international standards, (iii) modernization, and (iv) process re-engineering with a view to achieving better administrative efficiency, financial management, and satisfaction. The technology upgradation component constituted nearly 80% of the Tenth Plan outlay. The policy of opening of post offices was reviewed and it was decided that in order to rationalize the postal network, new post offices should be set up only through the redeployment of staff or relocation of the existing post offices.

**Box 12.3.1**  
**Basic Profile of the Postal Sector**

- Except for courier services, postal operations are still a government monopoly.
- Postal services in India have been highly subsidized as part of the government policy.
- Indian postal system is the largest in the world in terms of number of post offices/outlets numbering about 1.55 lakh, out of which nearly 90% post offices are in rural areas and remaining 10% post offices are in urban areas. In addition, 5405 Panchayat Sanchar Sewa Kendras are also providing basic postal facilities in rural areas.
- India Post is presently being served by as many as 5.4 lakh employees including 2.47 lakh departmental and 2.93 lakh extra-departmental employees to run its operations all over the country.
- The total expenditure in percentage of receipts for Posts was 123% in India as compared to 101% in the UK and 102% in the US.

### Targets and Performance of the Tenth Plan

12.3.4 As against a target of opening of 450 extra-departmental post offices, the department has been able to open 440 extra-departmental post offices. As regards the opening of Postal Sanchar Seva Kendras against a target set for 2400, the achievement has been 2371. The department has also been able to achieve fully its target of opening 45 post offices. As many as 8263 post offices were computerized against a target of 7700 post offices. In addition, 19 postal accounts offices were computerized as against a target of 22. All the 245 administrative post offices have also been computerized. There has been 100% achievement in computerization of 48 head record offices.

12.3.5 In the area of modernization, as against a target of 811, as many as 822 post offices have been modernized. The department has been able to modernize 338 speed post centres as against a target of 350. Modernization has also been done of mail motor depots as per the target. The department has set up 290 postal finance marts (PFMs) as against a target of 300.

12.3.6 In the field of philately upgradation, the department has performed well. Human resource development, which is the crucial element for supporting the whole process of modernization and induction of technology, has also been taken up by the department. As many as 303769 persons from different cadres were trained in their respective fields as against a target of 315700 persons. The department also established the National Data Centre that would help them in

providing various services across their network similar to anywhere banking.

### VISION AND STRATEGY FOR THE ELEVENTH FIVE YEAR PLAN

12.3.7 The vision statement of India Post reaffirms its social commitment and its focus on technology induction, entrepreneurial management, and achieving financial self-sufficiency. Taking into consideration the internal and external opportunities and challenges, the Eleventh Plan would focus on an all-round development of the DoP with a number of policy initiatives and building a brand image. The department would also aim to effectively utilize its network and reach for providing value-added services by developing appropriate linkages with various agencies/organizations.

### Key Constraints and Challenges

12.3.8 Owing to increasing competition and availability of other means of affordable communication including telephone, Internet, etc., India Post needs to become commercially viable by increasing revenue, while fulfilling the rising expectations of the customers through adoption of competitive and customer-friendly business strategies. This calls for an urgent need to redefine and reposition the department in the changed scenario. There is a need to improve quality of services and adapting them to the needs of the rapidly evolving and increasingly technology driven world. Besides, India Post also needs to focus its efforts on non-core activities based on information technology by leveraging its network and the last mile reach through partnerships.

12.3.9 The domestic postal market faces a number of opportunities and threats:

#### COMMUNICATION MARKET

- Electronics alternatives as well as organized and ad hoc couriers are both competing with India Post.

#### LOGISTICS MARKET

- National and international players are entering the logistics and express markets for providing better value-added services aimed at business customers.

#### MASS MEDIA MARKET

- Opportunities exist to develop direct mail and target the growing middle class community with targeted marketing.

#### RETAIL AND FINANCIAL MARKET

- With its extensive network, India Post is well placed to partner with banks, insurance companies, and other financial service providers for extending financial services to the rural and hitherto unreached population.

### Policy Issues for the Eleventh Five Year Plan

12.3.10 Taking into consideration the internal and external opportunities and challenges, the Eleventh Five Year Plan would focus on an all-round development and repositioning of the DoP. A few but important policy issues for the Eleventh Five Year Plan are mentioned below:

- Reorganize the DoP around the emerging technological and market realities and expand into newer business potential areas such as Global Business, Financial Services, Retail, Rural Business, etc.
- Widespread induction of technology aimed at computerizing and networking of all post offices using Central server-based system. Induction of other state-of-art processing systems including mail processing systems so as to provide service on par with global industry standards.
- Greater focus on human resource development with the objective of transformation of the human resource of the department into a technology-savvy, business-oriented workforce led by world-class managers.

- Transforming Postal Life Insurance into a commercial business entity making its own investment decisions and competing on a level playing field with other insurance entities, while conforming to requirements of Insurance Regulatory and Development Authority (IRDA) norms.
- Adoption of PPP model for development of postal estates by setting up a SPV for their commercial exploitation and revenue generation.
- Utilizing the widespread network and reach of India Post to act as an interface for the Central and State Governments with beneficiaries for delivery of various social sector schemes, and also for trade, business, and banking sectors.
- A new division is to be created to specifically target rural postal network with a view to utilizing the rural network and delivery strengths for revenue generation and extension of services/amenities to the rural areas.

### SCHEMES/PROGRAMMES TO BE IMPLEMENTED IN THE ELEVENTH FIVE YEAR PLAN

#### Network

12.3.11 The programme for the expansion of the postal network will be carried out in the Eleventh Five Year Plan, keeping in view the requirement of the customers, USO, accessibility, standards, and business potential through adoption of alternate/innovative means of providing access to the postal network, such as opening of franchisee outlets through induction of latest technology, apart from opening of new post offices.

12.3.12 There is an urgent need to utilize this unparalleled network to support various retail services through tie-ups with the Central and State Governments and private organizations and also support e-governance initiatives of the Central and State Governments. Post offices can function as retail outlets and as an interface between the customer and the governments, both Central and State, particularly in rural areas for the social sector schemes.

#### Mail Operations

12.3.13 Mail operations, viz., collection, transmission, and delivery would require focus. There is need to

resort to automation in mail handling at the important centres where substantial amount of load is there. Mail operations require prompt and efficient multi-modal transport system, which could be met by hiring/leasing of fast moving transport system, conveyors, transport for delivery and pick up of postal articles and wet-leasing of freighter air craft, etc. Mechanization of runner lines in rural areas is also needed for faster movement of mail in these areas.

12.3.14 There is a need to introduce and streamline proper track and trace systems for all the varieties of articles such as parcels, registered items, money orders, etc. Mail Business Centres (MBCs) are being set up as front line business wing of India Post offering one-stop solutions for varied mailing needs of the customers. MBCs will act as integrated mail business hub, undertaking the task of collection, processing, and delivery of mails. A total of 300 MBCs are proposed to be opened during the current Plan. MBCs will fulfil the objective of improvement in quality of service, reduction in cost of operations, and growth in mail business. The establishment of parcel post as a major strategic business unit of India Post has also been envisaged in the Eleventh Plan, as this business is expected to become a major source of revenue. Major parcel hubs will be provided with automatic parcel sorting systems, RFI systems, hydraulic pallet trucks, fork lifts, taper rollers, and other parcel handling equipments. It is also proposed to develop and establish a commercial system for parcel post for providing end-to-end solutions, covering booking, tracking, billing, and customer information system.

12.3.15 The objective during the Eleventh Five Year Plan is to work towards making India Post a major player in the logistics and supply chain management arena by providing distribution channels, inventory management, packaging services, warehousing, transportation, and time-definite distribution programmes. It is proposed to establish logistics centres in metro cities and major business towns and a logistics centre for international operations. India Post also needs to enter the international parcel and logistics business and function as the logistics partner for providing event-specific services for trade fairs, Commonwealth games, and State-sponsored events.

12.3.16 It is proposed to offer e-commerce solutions through tie-ups with suppliers which will provide various products to the customers to be delivered through posts. International mail segment has become highly competitive with the emergence of private operators in the sector and cross border posting of mails. Therefore, the Offices of Exchange in India, that is Airmail Offices, International Express Mail Service, and Foreign Post Offices at Delhi, Mumbai, Kolkata, Chennai, and Kochi, which process the international mail, would require capacity augmentation for high speed processing of mails and security during the Eleventh Plan in order to meet the challenges of competitive market.

## FINANCIAL SERVICES

### Postal Finance Marts (PFMs)

12.3.17 PFMs are one-stop shops for financial services such as mutual funds and other financial instruments. The PFMs would help in creating a distinct identity and branding of postal financial outlets, which can serve as a front end for the tie-ups with financial institutions and banks for vending their retail services. The success of these marts will depend on the kind of results they produce for the customers, which in turn will depend upon the expertise of the financial adviser.

### Banking

12.3.18 Post office saving bank is the single largest source of revenue for the department. It has been able to make a business of Rs 3500 crore as on 30 June 2007. With a customer base of 17.5 crore account holders, a branch network double the size of all the banks in the country put together, and with a diverse product range, the Post Office Savings Bank is the largest retail banking network in the country. This network and the depth of reach should be utilized to implement the 'Sampoorna Dak Khana Bachat Yojana Gram' Scheme.

12.3.19 Since any time anywhere banking, is the need of the hour, it is proposed to switch over computerization programme of Savings Bank and allied functions from local area network in individual post offices to central server-based technology. For this, investment on technology infrastructure, hardware and software requirements, and networking would be needed. This also includes tele-banking, ATM, etc. Post office can

also have tie-ups with existing banks for providing services to the customers.

### Money Transfer

12.3.20 Instant money-order (iMO) service was initiated during the Tenth Plan. There is a need to expand this service and extend its scope to interface the iMO with international payment gateways. We are tying up with other countries having large population of Indian origin through bilateral/multilateral agreements for International Financial Service. The existing money-order services will be progressively replaced by an electronic, IT-based money-order service which will offer many new service features and differential tariff structure.

### Insurance

12.3.21 Transforming Postal Life Insurance into a commercial business entity making its own investment decisions and competing on level playing field with other insurance entities, while conforming to requirements of IRDA norms is essential. In this direction, investment would be required for customization of products, improvement of after sale service, and modernization of customer interaction points. Funds would also be required for hardware and software support. There is also a need to develop internal expertise for fund management to enable investment of Post Office Life Insurance Fund/Rural Post Office Life Insurance Fund as per the investment pattern of IRDA.

### Philately

12.3.22 The focus on philately would continue to have its place during the Eleventh Five Year Plan as well. The following initiatives would need to be undertaken for promotion, product innovation, and quality/technology induction.

- Initiate online trading of philatelic items through the internet-based trading portals such as e-Bay, etc.
- Introduce new products like personalized stamps which have been very successful abroad.
- Introduce new postal stamps based on the different themes of national importance with emphasis on using postal stamps as medium of advertisement to generate additional revenue.

### Global Business Division

12.3.23 A Global Business Division has been set up in India Post to capitalize on the liberalized economy and also to exploit the business opportunities by opening of the postal sector as a result of WTO/GATT agreements. The Global Business Division would provide a single window solution for international business requirements of its customers. The Global Business Division projects India Post as a strategic partner for value addition to international business in mail, express, logistics, and remittance sectors. Besides this, the Global Business Division would provide an avenue for tapping new markets around the world for India Post.

### SUPPORT SYSTEMS

#### Technology Induction

12.3.24 It is proposed to undertake an extensive technology induction/upgradation programme during the Eleventh Five Year Plan with a view to achieving the goal of financial self-sufficiency for the department. During the Tenth Five Year Plan the department has been able to computerize about 8263 large departmental post offices. Now in the Eleventh Five Year Plan efforts would be made to computerize and network 17878 departmental post offices for providing effective and satisfactory service to its customers. In addition, 64000 selected branch post offices located in block/*tehsil* headquarters or in remote areas also will be computerized. Further, remaining administrative offices (up to sub-divisional level) including Postal Directorate, PSD/CSDs, Civil Wing offices, etc. will also be taken up for computerization. The proposed networking would enable the department to start various online services, viz., any time, any-where savings bank and other financial services, improve delivery thereby getting additional revenue. Networked hand-held digital devices could be developed to be carried by postmen/postal staff to enable not only delivery of articles and intimation of their status in real time, but also for booking of articles and offering other services such as accepting deposits, bill payment, other e-enabled services, etc. The same device could also be used to create franchise network.

#### Human Resource Management

12.3.25 The objective is a greater focus on human resource development with the objective of transfor-

mation of the human resource into a technology-savvy, business-oriented workforce led by world-class managers. Behavioural training is also essential to enable effective customer interaction. This would require restructuring of the Postal Staff College India (PSCI) and the postal training center network. It is also envisaged to evaluate the role of PSCI from a training institution to a nodal training policy institute with international linkages.

### Marketing, Research, and Development

12.3.26 For the wide range of activities planned to augment business and garner additional revenue, it is necessary to have a professional marketing, research, and product development organization to support the implementation of the plans. This plan scheme envisages setting up of marketing, research, and product development centre after carrying out feasibility study. The programme proposed to be implemented includes the development of a National Address Management System which will add to the professional strength of the department and creation of a brand identity for India Post.

### Estate Management

12.3.27 In order to fulfil the USO for providing easy access to postal services, construction of buildings is essential to provide the vital infrastructure for efficient postal operations, while simultaneously focusing on revenue generation from estates in commercial locations. The strategy for construction would be to construct buildings in identified highly commercial locations in PPP mode through an SPV set up for this purpose. The existing programme for construction of buildings with government funding would also be continued on plots with low commercial value.

12.3.28 Departmental buildings in remote and inaccessible areas are proposed to be provided with solar panels for easy access to power using environment-friendly technology. Attention is also proposed to be given to improvement of the working environment and ergonomics and branding of operative offices, with particular emphasis on post offices.

### Material Management

12.3.29 Setting up of an efficient material management

system through upgradation of technology and provision of required equipment facilities is essential, since the Postal Store Depots and post offices handle a very large volume of stationery, including forms for use in operative offices and equipment which is essential for the smooth functioning of the postal system.

### SUPPLY OF EQUIPMENTS

12.3.30 All the necessary and the other modern equipments for packing, unpacking, binding, moving, stapling, cash counting, etc. would need to be procured and supplied in time.

### QUALITY

12.3.31 There is a need to develop an R&D centre under marketing and to encourage development of indigenous franking machines, mail processing equipment, vending machines, etc.

### PROCESS IMPROVEMENT

12.3.32 It also proposed to set up call centres all over the country based on Interactive Voice Response System, starting initially with eight locations.

### THE PATH AHEAD

12.3.33 The Eleventh Five Year Plan would endeavour to transform India Post into a modern, efficient, and self-sufficient organization responsive to market conditions and fully utilizing its potential for service and revenue generation, while maintaining its commitment to deliver on its USO. To achieve this, the major initiatives/action points envisaged for the Eleventh Five Year Plan are the following:

- Preparing an action plan for restructuring the DoP in order to reaffirm its vision statement on its social commitment to the people of our country.
- Focus on utilizing the unparalleled network of the DoP to support e-governance initiatives of the Central and State Governments and as a retail outlet/interface between the customer and the governments both at Centre and State, particularly in rural areas.
- Focus on providing technological support for an extensive computerization of the network using integrated software and central-server technology.
- With a view to further reducing the deficit, the DoP

needs to define its USO, introduce suitable legislative amendments in the IPO Act 1898, and set-up a regulatory mechanism for the postal sector to ensure a level playing field.

- Transforming Postal Life Insurance into a commercial business entity making its own investment decisions and competing on level playing field with other insurance entities, while conforming to requirements of IRDA norms.
- Action plan needs to be put in place for postal estates management.
- Action plan needs to be prepared to set up and maintain MBCs as frontline business wing of India Post offering one-stop solutions for varied mailing needs of the customers.
- Action plan needs to be prepared to set up and maintain prompt and efficient multi-modal transport system incorporating wet-leasing of aircraft, road transport, etc.
- Action plan needs to be prepared to set up and maintain a grid of automated mail processing centres for various hubs in the country to support the mail sorting processes.
- Make efforts to expand the Plan programme for setting up PFMs.
- Focus on human resource management, particularly training, to support the delivery of services to customers, induction of new technology, specializing in banking and insurance sectors.
- Develop a professional organization to support marketing, research, and product development initiatives to various services offered by the department.
- For all-round development of Ladhakh, Andaman and Nicobar Islands, and Lakshadweep Island, SCPs would be made operative particularly for opening branch offices, construction of buildings, and other needs.
- Focus on special needs of the North East circle as per the comprehensive sub-plan which includes mail operations, banking and money transfer, computerization and training as well as construction of buildings.

12.3.34 The GBS for the Eleventh Five Year Plan of the DoP has been tentatively fixed at Rs 3536 crore at 2006–07 constant price and Rs 4000 crore at current price.

<sup>1</sup> The figures in bracket refer to CAGR.

## 12.4 INFORMATION AND BROADCASTING

### OVERVIEW

12.4.1 One of the sectors which has consistently outperformed the GDP growth year after year is the Entertainment and Media Services Sector which is expected to grow at a CAGR of 18% till 2010 and beyond during the Eleventh Plan period. This sector comprises television (CAGR, 22%),<sup>1</sup> films (16%), radio (28%), music (4%), print media (13%), live entertainment (16%), out-of-home advertisement (17%), and Internet advertising (43%). Its existing as well as annual turnover and its CAGR are given in Table 12.4.1.

12.4.2 It is one sector which responds to extraordinary GDP growth with a multiplier. When incomes rise, more resources get spent on leisure. The contribution of each media sub-sector to the overall revenues as in 2006 and as projected for 2011 clearly brings out growing preponderance of electronic media over print media as depicted in Figures 12.4.1(a) and (b).

12.4.3 Growth in infrastructure, technology, and institutional support in the information and broadcasting (I&B) sector was in consonance with overall national development perspective. Film, information, and broadcasting sectors of the economy have achieved formidable strength. The share of I&B sector in total employment, income, and investment has gone up significantly. Issues in the national scenario of this sector revolved around foreign investment, regulation, intellectual property rights, content enrichment, restructuring of Prasar Bharati, digitalization and maintaining archives of the entire spectrum of I&B media unit.

### REVIEW OF THE TENTH PLAN

#### Information Sector

12.4.4 During the Tenth Plan, information sector of the Ministry of I&B focused on the following:

- Directorate of Advertisement and Visual Publicity, with its function of providing multi-media publicity to government's development programmes and

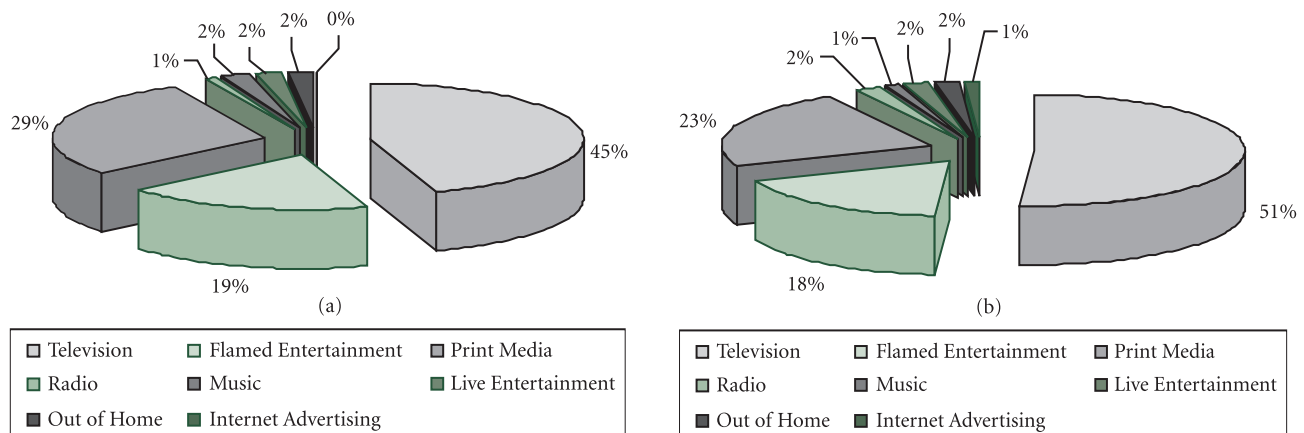
**TABLE 12.4.1**  
**Annual Growth of Indian Entertainment and Media Industry**

(Rs Million)

|   | 2004   | 2005   | 2006E  | 2007F  | 2008F  | 2009F  | 2010F  | 2011F   | CAGR |
|---|--------|--------|--------|--------|--------|--------|--------|---------|------|
| Television  | 128700 | 158000 | 191200 | 219900 | 266000 | 331000 | 431000 | 519000  |      |
| Annual growth                                       |        | 23%    | 21%    | 15%    | 21%    | 24%    | 30%    | 20%     | 22%  |
| Filmed entertainment                                | 59900  | 68100  | 84500  | 96800  | 112000 | 126450 | 146000 | 175000  |      |
| Annual growth                                       |        | 14%    | 24%    | 15%    | 16%    | 13%    | 15%    | 20%     | 16%  |
| Radio   | 2400   | 3200   | 5000   | 6500   | 8500   | 11000  | 14000  | 17000   |      |
| Annual growth                                       |        | 33%    | 56%    | 30%    | 31%    | 29%    | 27%    | 21%     | 28%  |
| Music   | 6700   | 7000   | 7200   | 7400   | 7500   | 7600   | 8000   | 8700    |      |
| Annual growth                                       |        | 4%     | 3%     | 3%     | 1%     | 1%     | 5%     | 9%      | 4%   |
| Live entertainment                                  | 7000   | 8000   | 9000   | 11000  | 13000  | 16000  | 18000  | 19000   |      |
| Annual growth                                       |        | 14%    | 13%    | 22%    | 18%    | 23%    | 13%    | 6%      | 16%  |
| Entertainment industry <sup>#</sup>                 | 204700 | 244300 | 296900 | 341600 | 407000 | 492050 | 617000 | 738700  |      |
| Annual growth                                       |        | 19%    | 22%    | 15%    | 19%    | 21%    | 25%    | 20%     |      |
| Print media   | 87800  | 109500 | 127900 | 144000 | 162200 | 182300 | 206500 | 232000  |      |
| Annual growth                                       |        | 25%    | 17%    | 13%    | 12%    | 13%    | 12%    | 13%     | 13%  |
| OOH advertisement                                   | 8500   | 9000   | 10000  | 12500  | 14500  | 16500  | 19000  | 21500   |      |
| Annual growth                                       |        | 6%     | 11%    | 25%    | 16%    | 14%    | 15%    | 13%     | 17%  |
| Internet advertising                                | 600    | 1000   | 1600   | 2700   | 4200   | 6000   | 8200   | 9500    |      |
| Annual growth                                       |        | 67%    | 60%    | 69%    | 56%    | 43%    | 37%    | 16%     | 43%  |
| Total entertainment and media industry <sup>#</sup> | 301600 | 363800 | 436400 | 500800 | 587900 | 696850 | 850700 | 1001700 |      |
| Annual growth rate (%)                              |        | 21%    | 20%    | 15%    | 17%    | 19%    | 22%    | 18%     | 18%  |

Note: # The figures taken above include only the legitimate revenues in each segment. Revenues from the Animation and Gaming segments have not been included in the industry size as these are traditionally included in the Indian IT and Software Revenues; E = Estimates; F = Forecasted

Source: Industry estimates and PwC analysis/Federation of Indian Chambers of Commerce and Industry (FICCI): Indian Entertainment and Media Industry, March 2007.



Source: Industry estimates and PwC analysis/FICCI: Indian Entertainment and Media Industry, March 2007.

**FIGURE 12.4.1: Indian Entertainment and Media industry—Status and Projections**

policies in various fields, and achievement in these areas, focused on the need for technological up-gradation of its communication equipments and modernization of its programme designs.

- Song and Drama Division (SDD)—being related to publicity, education, and entertainment through the traditional media of folk music, dance, theatre, and puppetry—targeted at extensive use of traditional

- media for communication and modernizing its facilities for programme and designs.
- Directorate of Field Publicity (DFP) set goals for increasing its coverage, computerization of regional offices, creation of local software for effective communication, and streaming of its feedback mechanism.
  - Some of the major policy initiatives taken include:
    - Indian editions of foreign scientific, technical, and specialty magazines, periodicals, and journals were allowed.
    - Foreign investment up to 100% in publishing companies publishing specialty magazines was allowed.
    - 26% foreign equity in Indian firms publishing newspapers and news and current affairs periodicals should be allowed.
  - New Advertisement Policy came into effect from 1 January 2006. Audio-Visual Advertisement Policy was also approved by the government on 8 November 2006 and guidelines were also issued for empanelment of Audio and Video Producers on 21 June 2006.

### Film Sector

12.4.5 The main objectives of the film sector were to produce, collect, display good quality films, children's films, documentaries, short films, animation films for internal and external publicity, and capacity building in film producing, directing, acting, editing, etc. Certification of films for exhibition is a continuous regulatory work pertaining to this sector. Maintenance and enforcement of National Film Archive of India and of the Archives of the Films Division enables preservation of the film wealth for posterity. It acts as a facilitator for the industry to organize film festivals and provide marketing support including import and export of films. Indian films are important tools for cultural diplomacy. The I&B Ministry participates in various international fairs and organizes festivals in collaboration with Indian Embassies abroad. Although the Indian film industry produces over a 1000 films a year, it has a negligible share in the global film industry revenues. Therefore, it requires a strong policy support to achieve a place of prominence in the world market. Piracy menace had been a major cause of loss of revenue to film industry. The activities of

the film institutes, such as Satyajit Ray Film and Television Institute (SRFTI), Kolkata; Film and Television Institute of India (FTII), Pune; and IIMC were focused on modernization of training infrastructure and improvement in quality of training. IIMC has introduced TV journalism in its curriculum in response to growing demand for this discipline from the student community.

### Broadcasting Sector

12.4.6 The broadcasting sector has already achieved major milestones on its growth journey, beginning with All-India Radio (AIR) and Doordarshan (DD). The scale of its operation, technological up-datedness, and timeliness in the move towards excellence in content and transmission make it a vibrant sector. Radio broadcasting infrastructure consists of 229 AIR analogue terrestrial radio Medium Wave and Short Wave stations, 264 analogue private terrestrial stations, and one private satellite radio, that is, World Space. The television broadcasting setup consists of 1398 analogue terrestrial transmitters and 4 digital transmitters in public sector, 6000 Multi-System Operators, and 65000 Local Cable Operators in private sector, 3 digital DTH satellite television operators in public and private sector.

12.4.7 Out of 210 million houses, by 2001 Census figure, television has reached 108 million, with cable and satellite in 68 million homes. The DTH subscription is around 5.6 million (DD DTH share 4.0 million, and private DTH 1.6 million). Similarly, number of radio sets was 132 million. Total radio coverage by population has reached 99.13%. There are in all 229 AIR channels and 42 private FM stations.

12.4.8 The creation of excellent content has become a vital need for survival of public service broadcaster to achieve its three-some objective of entertainment, education, and information in every single programme produced. During the Tenth Five Year Plan, first time high-quality content creation gathered serious attention to provide public service broadcaster a competitive edge vis-à-vis rapidly flourishing private broadcasting firms and rising broadcasting standards. In response to this, an alternative mechanism for creating rich content was devised by providing funds

to institutions and individuals, known for professional excellence and high standards.

12.4.9 DD completed the J&K Special Package Phase I, and North East Package Phase I. This has enhanced coverage of television in these areas. The national channel coverage, both terrestrial as well as satellite, has reached a 90.7% population. News channel coverage has reached 48% of the population. DD also started the nation-wide DTH Ku band telecasting through 35 TV and 20 AIR Audio channels free of cost.

12.4.10 There were significant shortfalls during the Tenth Plan period both in terms of extending coverage and enhancing digitalization. Broadcasting in High Definition Television (HDTV) and interactive multimedia TV services have not yet started. The Conditional Access System (CAS) is being implemented in four metros only. As regards radio broadcasting, Digital Radio Mondiale (DRM) transmission has not yet started, and FM services did not reach the Tenth Plan target of 60% coverage. Internet radio broadcasting also did not take off as envisaged. The Tenth Plan strategy of content creation through alternative mechanism of funding did not go beyond signing an MoU between the Prasar Bharati and Public Service Broadcasting Trust.

### VISION AND STRATEGY IN THE ELEVENTH FIVE YEAR PLAN

12.4.11 The growth potential of various media units needs to be harnessed fully to place broadcasting economy on a high growth path during the Eleventh Five Year Plan. The media units have an immense role to play in education, entertainment, and information dissemination. For a sustained growth in these areas, appropriate content, technology, and policy initiatives have to be evolved. Competitiveness and cost-effectiveness comes on the wings of appropriate technology and compatible manpower in all segments. In rapidly changing information and broadcasting sector, adopting new technologies and conceiving new technological solutions are crucial. PPP is the one of the most plausible solution for funding new technological interventions and bringing in competitiveness.

12.4.12 The Public Service Broadcaster in India, namely, the Prasar Bharati, enjoyed monopoly in

broadcasting till recently. There was near absence of private sector broadcasters. Now in the liberalized information and broadcasting sector with global and domestic private players, public service broadcasting no more plays that dominant role in reach and technology. This new reality required government to assume simultaneously the role of facilitator and promoter of the information and broadcasting sector.

### POLICY ISSUES, PROGRAMME REFORMS, AND NEW INITIATIVES IN THE ELEVENTH FIVE YEAR PLAN

#### 12.4.13 Information

- In recognition of the importance of traditional media units, emphasis should be on the use of IT-enabled applications and other technological advancement for increasing their reach.
- There is a need for promoting partnership with the private sector in the field of traditional media units for bridging the information gap.
- The issues pertaining to Intellectual Property Rights in the information sector need to be addressed.
- Press and Registration of Books Act 1867 needs to be revisited to make it in tune with contemporary needs.
- Modernization of SDD's infrastructure in view of its importance needs to be emphasized.
- Redefining the objectives of the DFP and repositioning its network to reach remote, inaccessible, and strategic areas for effective reach and publicity.
- Strengthening the organizational set up of the Registrar of Newspaper for India (RNI) in North East and Central Zones.
- Completion of National Media Centre, a project of Press Information Bureau.
- Transformation of the IIMC into a global school in journalism.

#### 12.4.14 Films

- Formulation of a National Digital Policy for entertainment sector.
- Revamping of Cinematograph Act of 1952 to address the emerging technologies and new challenges.
- Need to encourage film tourism for targeting the opportunities in global film sector.
- Building up a Centre of Excellence for animation, gaming, and special effects through PPP mode projects.

- Transforming FTII and SRFTI into global film and television schools.
- Encouraging the industry in creating new markets abroad and developing existing markets by supporting participation in film markets and festivals.

#### 12.4.15 Broadcasting Content

- Public Service Broadcasting should focus on developmental programmes of the government and bringing in social awareness.
- Reorganization of Prasar Bharati.
- With the re-emergence of radio as a medium of profound reach and impact, especially FM radio, AIR needs to forge partnerships with private FM players to expand and effectively utilize this medium.
- Establish an International Channel through PPP.
- Facilitating emergence of India as an important source for high-quality animation-based content.

#### 12.4.16 Expansion of Transmission Network, Digitalization, and Mobile Media

- The DTH market has matured and the arrival of IPTV and mobile broadcasting is imminent and need to be nurtured.
- With the convergence of technologies and availability of single gadgets with multiple applications, there are issues relating to policies, standardization of infrastructure, practices, and convergence which will need to be dealt with. One issue dominating the mind of telecom companies entering the area of IPTV is whether this will be regulated by Telecom FDI norms or Broadcasting FDI norms. A Joint Group of Ministry of Information and Broadcasting (MoI&B) and Department of Telecom has recommended that IPTV be governed as per licenses issued by Ministry of Communication and IT. Recommendations of the Joint Group are under consideration of the government.
- Digitization of content, phasing out analogue broadcasting, and creating an enabling environment for promotion of audio/video on demand.
- Digital archiving of films acquired by National Films archives and produced by Films Division.
- Introduction of HDTV Broadcasting and removal of barriers for spread of Digital Terrestrial Transmission (DTT), DTH, IPTV, and Mobile Broadcasting.
- Articulation of an effective IPR protection regime

for film, music, and home-video.

- FM coverage to be enhanced from 35% to 45% by using DRM+ compatible transmitters.
- Border areas, rural areas, and semi-urban areas to be accorded priority for FM coverage.
- No further expansion of DD terrestrial network. However, emphasis should be on digitization. Very Low Power Transmission to go out of service on completion of their life. Border and uncovered areas to be covered through technologies like DTH.
- Private players' entry in the DD transmission network for providing mobile solutions and terrestrial transmission should be preferred through PPP route.

#### 12.4.17 Miscellaneous Broadcasting Initiatives

- Mobile media solutions on a fast track basis should be implemented to provide variety in entertainment platforms.
- Digital transmission to be encouraged through Headend in the Sky.
- Common Regulator for Information, Communication, and Entertainment (ICE) Sector. The earlier initiative to create a 'Convergence Commission' with a 'carriage bureau' and a 'content bureau' needs to be revisited. In the context of the general movement of technology in the direction of convergence, that is (i) convergence of network platforms (viz., broadcast, satellite, cable, telecom) carrying similar kinds of services and (ii) merging of consumer devices such as telephones, televisions, PCs, all capable of triple-play, is a pointer that increasingly all carriage networks and devices will be able to carry all kinds of contents. It, therefore, makes sense to have a single regulator. At least this issue of a single regulator for telecom and broadcasting sectors deserves to be revisited.
- Early setting up of a Broadcast Regulator for resolution of legal and regulatory issues.
- Committee on ICE in its report on Going Digital recommended a stepwise migration path from the present analogue broadcasting economy to the digital one.

#### THE PATH AHEAD

12.4.18 The Eleventh Five Year Plan would aim at transforming the information and broadcasting sector, as well as the media and entertainment sector,

into a modern, efficient, and responsive entity. To achieve this objective, in addition to putting in place necessary policy interventions, the barriers to investment in entertainment and media industry, which is spearheaded by the private sector, need to be effectively addressed. These include:

- Lack of uniformity in media policy for foreign investment FDI limits vary in different sectors—DTH (49%), cable (49%), and content (26%) for news on television and print; 100% for non-news in TV and print; 20% in radio; and 100% in film industry. This needs harmonization. In addition, there is a need to rationalize tax-treatment of foreign companies.
- Cross-media ownership: While policy enunciation imposes an obligation to observe cross-media ownership rules on media companies, these rules have not been formalized so far. As a result of this print and electronic media integration is taking place, which could result in emergence of media behemoths acquiring a mind-share disproportionate to what is permissible in a competitive market environment. Some boundary limits need to be laid down and this issue that needs to be revisited for the sake of long-term health of the industry.

12.4.19 There is need for incentivizing the consumer and equipment manufacturers for successful roll out of CAS and DTH across the country and timelines need to be fixed so that all the stakeholders could put their acts together.

12.4.20 Digitization of satellite transmission, production centres/studios, and terrestrial transmission needs to be undertaken in a mission mode along with introduction of HDTV, IPTV, mobile TV, and other value-added services. For the entire broadcasting sector ‘Going Digital’ and ‘Farming out Excess Bandwidth’ need to be taken up expediently to ensure switching over to digital transmission by 2015 and optimal use of scarce bandwidth.

12.4.21 The GBS for the Eleventh Five Year Plan of the MoI&B has been tentatively fixed at Rs 4809 crore at 2006–07 constant price and Rs 5439 crore at current price.

12.4.22 The progress of the plan outlays/expenditure during the Tenth Five Year Plan and the Eleventh Plan outlays of the communication and information technology sector as a whole are given at Annexure 12.4.1.

**ANNEXURE 12.2.1**  
**Performance of IT Hardware and Software during the Tenth Five Year Plan**

Electronics Production (Financial Year) (Rs Crore)

| Item                                     | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07# |
|--|---------|---------|---------|---------|---------|----------|
| 1. Consumer electronics                  | 12700   | 13800   | 15200   | 16800   | 18000   | 20000    |
| 2. Industrial electronics                | 4500    | 5550    | 6100    | 8300    | 8800    | 10400    |
| 3. Computers                             | 3550    | 4250    | 6800    | 8800    | 10800   | 12800    |
| 4. Communication and broadcast equipment | 4500    | 4800    | 5350    | 4800    | 7000    | 9500     |
| 5. Strategic electronics                 | 1800    | 2500    | 2750    | 3000    | 3200    | 4500     |
| 6. Components                            | 5700    | 6600    | 7600    | 8800    | 8800    | 8800     |
| Subtotal                                 | 32750   | 37500   | 43800   | 50500   | 56600   | 66000    |
| 7. Software for exports                  | 36500   | 46100   | 58240   | 80180   | 104100  | 141800   |
| 8. Domestic software                     | 10874   | 13400   | 16250   | 21740   | 29600   | 37800    |
| Total                                    | 80124   | 97000   | 118290  | 152420  | 190300  | 245600   |

Note: # Estimated.

Source: DIT Annual Report 2006-07.

**ANNEXURE 12.2.2**  
**Performance of Export Segment of IT Hardware and Software during the Tenth Five Year Plan**

Electronics Export (Financial Year) (Rs Crore)

| Item                                     | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07#* |
|--|---------|---------|---------|---------|---------|-----------|
| 1. Consumer electronics                  | 700     | 750     | 825     | 1150    | 2000    |           |
| 2. Industrial electronics                | 950     | 1400    | 1515    | 1500    | 2300    |           |
| 3. Computers                             | 1800    | 550     | 1440    | 1200    | 1025    |           |
| 4. Communication and broadcast equipment | 150     | 500     | 165     | 350     | 500     |           |
| 5. Components                            | 2200    | 2400    | 3755    | 3800    | 3800    |           |
| Subtotal                                 | 5800    | 5600    | 7700    | 8000    | 9625    | 11500     |
| 6. Computer software                     | 36500   | 46100   | 58240   | 80180   | 104100  | 141800    |
| Total                                    | 42300   | 51700   | 65940   | 88180   | 113725  | 153300    |

Note: # Estimated.

Source: DIT Annual Report 2006-07.

**ANNEXURE 12.4.1**  
**Progress of the Plan Expenditure of Communication and Information Sector**

| S. No.      | Communication and Information Sector     | Tenth Plan (2002-07) Outlay | Annual Plan (2002-03) |          | Annual Plan (2003-04) |         | Annual Plan (2004-05) |         | Annual Plan (2005-06) |          | Annual Plan (2006-07) |          | Tenth Plan (2002-07) |                         | Eleventh Plan (2007-12) Projected GBS (At Current Price) |
|-------------|--|-----------------------------|-----------------------|----------|-----------------------|---------|-----------------------|---------|-----------------------|----------|-----------------------|----------|----------------------|-------------------------|--|
|             |  |                             | BE                    | Actual   | BE                    | Actual  | BE                    | Actual  | BE                    | Actual   | BE                    | Actual   | Total BE             | Anticipated Expenditure |  |
| 1           | 2  | 3                           | 4                     | 5        | 6                     | 7       | 8                     | 9       | 10                    | 11       | 12                    | 13       | 14                   | 15                      | 16   |
| 1.          | Department of Telecommunication#         | 80607.44                    | 19277.79              | 11610.43 | 14955.00              | 7423.14 | 11660.00              | 6707.67 | 11801.01              | 8000.25  | 19509.31              | 17468.22 | 77203.11             | 51209.71                | 1752.00 (89581.56)                                       |
| 2.          | Department of Information Technology#    | 5492.00                     | 593.58                | 465.07   | 577.45                | 494.63  | 889.27                | 644.85  | 1087.56               | 879.85   | 1268.27               | 1273.27  | 4444.13              | 3757.67                 | 12496.00 (2163.18)                                       |
| 3.          | Department of Posts                      | 1350.00                     | 50.00                 | 45.91    | 150.00                | 63.00   | 200.00                | 142.16  | 354.00                | 301.11   | 419.00                | 419.00   | 1173.00              | 874.51                  | 4000.00  |
| 4.          | Ministry of Information and Broadcasting | 5130.00                     | 878.00                | 693.20   | 890.00                | 524.23  | 955.00                | 421.24  | 1120.00               | 859.42   | 538.00                | 310.13   | 4381.00              | 2808.22                 | 5439.00  |
| Grand Total |  | 92579.44                    | 20799.37              | 12814.61 | 16572.45              | 8505.00 | 13704.27              | 7915.92 | 14362.57              | 10040.63 | 21734.58              | 19470.62 | 87201.24             | 58650.11                | 23687.00 (91744.74)                                      |

Note: # includes IEBR; figures in parenthesis indicate projected IEBR.

Source: Documents of 'Annual Plan' and 'Demand for Grants' of DIT, DoP, DoT and Mo I&B.