17

Telecommunications

17.1 The development of the Information and Communications Technology (ICT) sector has transformed the way we live and the way that business is conducted at all levels. It has helped India in her march towards creating a knowledge society. The expansion of ICT into all sectors will help achieve the Eleventh Plan objectives of inclusive growth, enable us to achieve our objectives in education and healthcare, as well as in reaching social benefits to the intended beneficiaries amongst the socially and economically weaker sections. It also holds great potential in disseminating knowledge and awareness to the rural sector, especially to the farm sector and enables it to improve productivity and incomes through the adoption of better cultural practices, greater awareness of the situation in markets, about prices, and improved information about the management of pests, and the constraints from weather related events.

17.2 The Eleventh Plan has laid emphasis on a world-class telecommunication infrastructure as a vehicle of inclusive growth. A digital divide has arisen in terms of internet and broadband connectivity between urban and rural India and the policy has to address this issue squarely. With convergence of technologies, it is now possible to provide multiple services on a single platform and on a single device. To take full advantage of the technology, digitalization of the broadcasting network should be given priority, and a complete switchover made to digital transmission by 2015, as planned.

17.3 The National e-Governance Plan (NeGP) requires that ministries and departments be encouraged to provide services online and there are guidelines for spending 2–3 per cent of budgetary allocations for ICT development and e-governance programmes.

TELECOMMUNICATIONS

17.4 India had the second largest network with 562.15 million telephone connections at the end of December 2009. It has grown very rapidly in the range of 40 per cent per annum, which has permitted the addition of nearly 300 million connections in the first two and a half years of the Eleventh Plan. The Eleventh Plan of the Department of Telecommunications (DoT) aims at bridging the digital divide between urban and rural areas and extending broadband connectivity. Rural telephony is an integral part of the Universal Service Obligation Policy which is executed through the Universal Service Obligation (USO) Fund. Gross Budgetary Support (GBS) for the Eleventh Plan for DoT was fixed at Rs 1,752 crore with an Internal and Extra-Budgetary Resources (IEBR) component of Rs 89,582 crore.

17.5 The broad Eleventh Plan targets in telecom sector vis-à-vis corresponding achievements made so far are given in Box 17.1. The growth of telephony in India has been led primarily by the wireless segment with over 10–12 million connections, on average, being added every month.

Box 17.1
Eleventh Plan Targets and Achievements in Telecom Sector

Eleventh Plan Broad Physical Targets in the Telecom Sector	Achievements/Status as on December 2009
To reach a telecom subscriber base of 600 million.	Total no. of telephone connections (up to December 2009): 562.15 million (wireless: 525.09 and wire line: 37.06 million). Overall tele-density at the end of December 2009 was 47.88 per cent (which in turn consists of an urban tele-density of 110.96 per cent and a rural tele-density of 21.16 per cent).
To provide 100 million rural telephone connections by 2010 and reach 200 million connections by 2012, that is, achieve a rural tele-density of 25 per cent.	The number of rural connections added up to December 2009 was 174.53 million and present rural tele-density is 21.16 per cent.
To provide a telephone connection on demand across the country at an affordable price as envisaged in the Broadband Policy, 2004.	Almost achieved.
To provide a broadband connection on demand across the country by 2012.	Programmes initiated. Total number of broadband connections: 7.82 million.
To provide Third Generation (3G) services in all cities/towns with more than 1 lakh population.	This is yet to be achieved, as the 3G Spectrum is expected to be auctioned during first half of 2010.
To facilitate introduction of mobile TV.	Introduced on an experimental basis in Mumbai and Delhi.
To provide broadband connectivity to every secondary school, health centre, and gram panchayat (GP) on demand in two years.	Programmes initiated.
To make India a hub for telecom equipment manufacturing by facilitating establishment of telecom-specific SEZs.	During Eleventh Plan the capital investment in the telecom sector is around Rs 8,30,000 crore. Further Nokia, Motorola, Flextronics, and Foxconn have set up SEZ units within the country for manufacturing mobile handsets.
Establishing Telecom Centres of Excellence (TCoEs) in premier educational institutions and other reputed organizations in the country in the PPP mode.	Under Telecom Development and Investment Promotion (TDIP), 7 Telecom CoEs have been set up in the PPP mode in various areas of the telecom sector.

17.6 Rural areas in the country have experienced rapid growth in telecom services and the tele-density increased from 5.9 per cent in March 2009 to 21.16 per cent in December 2009. The total number of rural communications at the end of December 2009 was 174.53 million compared to 47 million at the start of the Eleventh Plan. In November 2004, an agreement was signed with BSNL to provide public telephones under the Bharat Nirman programme to 66,822 uncovered villages. The roll-out period was initially prescribed as 20, 40, and 40 per cent respectively over a period of three years ending November 2007. This period has since been extended. As on December 2009,

61,186 village public telephones (98 per cent) had been provided. However, BSNL has informed DoT that 4,520 villages cannot be provided public telephones due to various reasons. For instance, certain areas are affected by extremism, some villages are de-populated, and certain villages are not traceable or have been submerged.

17.7 The number of telephone subscribers in India stood at 562.15 million at the end of December 2009. The overall tele-density reached 47.88 as on December 2009. The private sector is playing an important role in the expansion of the telecom sector and the growth

has been largely driven by private enterprise. This has been possible because of the liberalization regime put forward by the government. The share of private sector in total telephone connections was 82.33 per cent as on December 2009 as against a meagre 5 per cent in 1999. There were 241 Unified Access Service, 2 Basic Service, and 38 Cellular Mobile Service Licenses by December 2009. The government had issued 24 International Long Distance Service and 29 National Long Distance Service licenses (including BSNL) by December 2009. Achievements of both the public and private sectors up to December 2009 are given in Table 17.1.

17.8 The year-wise growth of telephone connections during the Eleventh Plan (from April 2007 to December 2009) is given in Figure 17.1.

17.9 The internet subscriber base has not grown as envisaged. As on December 2009, it stood at 15.24 million, out of which the number of broadband subscribers was 7.82 million and the share of broadband subscription in the total internet subscription was 51.3 per cent. The number of subscribers of public and private ISPs stood at 10.78 million and 4.46 million respectively with corresponding market shares of 70.73 per cent and 29.27 per cent. BSNL holds 55.91 per cent of the market share with a reported subscriber base of 8.52 million. MTNL is at the second place with 2.26 million subscribers followed by Bharti (1.25 million).

17.10 There is a growing need for more bandwidth to support the spectacular growth in cellular telephony.

TABLE 17.1
Achievements of Public and Private Organizations up to December 2009

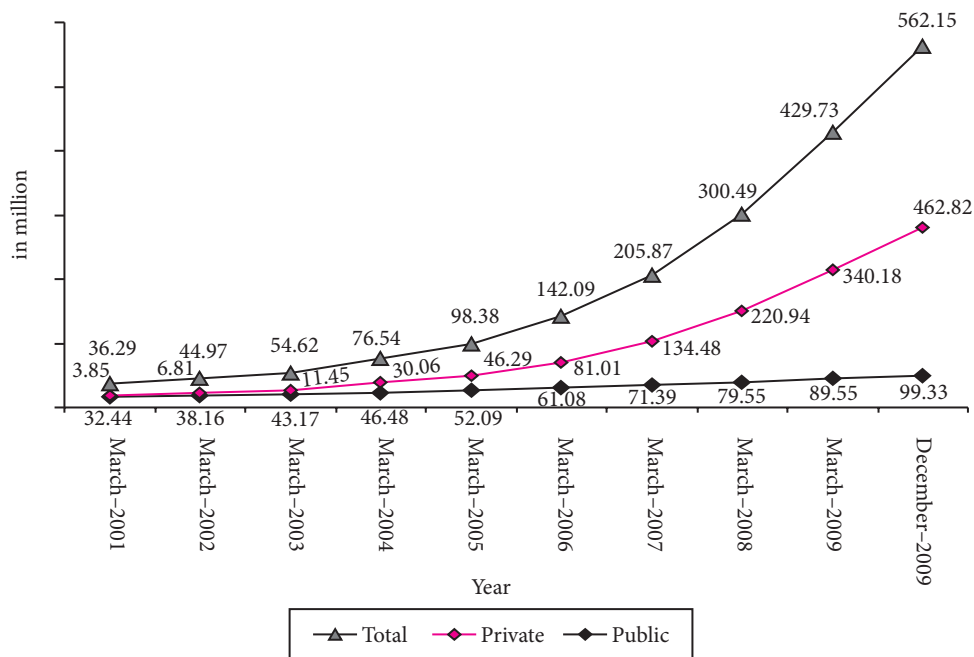| Service Provider	Total Telephone Subscribers (in million)	Market Share of Total Telephone Subscribers (%)	Wireline Subscribers (in million)	Wireless Subscribers (in million)	Market Share of Wireless Subscribers (%)	Rural Subscribers (in million)	Market Share of Rural Subscribers (%)
Public	99.3	17.7	31.6	67.7	12.9	32.3	18.5
Private	462.8	82.3	5.5	457.4	87.1	142.2	81.5
Total	562.2	100.0	37.1	525.1	100.0	174.5	100.0

FIGURE 17.1: Growth of Telephone Connections during the Eleventh Plan (April 2007–December 2009)

Besides, catering to the sheer increase in the number of subscribers, greater bandwidth is also needed for value added and better quality service. The government is committed to introducing 3G services and efforts are underway to auction the spectrum for the introduction of 3G and Wireless Broadband Alliance (WBA), services which are likely to transpire in the beginning of 2010–11. Policy has to ensure the creation of incentives for efficient use of the spectrum. The counterpart to this is a provision to recover spectrum from assigned users if it is not being used as per the terms and to reassign it. The government should also consider permitting spectrum trading as a measure of efficiency.

REMAINING PLAN PERIOD: AGENDA IN TELECOMMUNICATIONS

17.11 The laying of optical fibre cables in uncovered areas, especially in rural areas must proceed towards completion. An appropriate scheme of operation for auction and managing of 3G and Wireless Broadband Service (WBS) is called for. This is linked to the necessary jump in broadband connections, including rural broadband. MTNL and BSNL need to improve their productivity and asset usage by pushing innovative value added services. The policy for utilization of funds under USO requires to be reworked in order to address the expansion of rural telephony and rural broadband and ICT penetration into the rural areas in general.

INFORMATION TECHNOLOGY

17.12 The NeGP is one of the major Eleventh Plan initiatives that the department has prepared to contribute to the wider development and progress of Indian society. In addition, there are other schemes, such as the National Knowledge Network (NKN), the Information Technology Research Academy (ITRA), and skill development in IT, which plan to train 10 million persons by 2022. These are important components of the National Skill Development Policy. The principal targets set for the department in the Eleventh Plan are given in Box 17.2.

17.13 The achievements of the department in the Eleventh Plan are given in Box 17.3.

Box 17.2
Targets for the Eleventh Plan

- Encourage state governments to initiate major citizen-centric mission projects under NeGP, preferably in the PPP mode
- Fast replication of already successful e-governance programmes
- Encourage the adoption of e-procurement model in all government procurements
- Promote electronics/IT hardware and the semiconductor manufacturing industry
- Address issues related to cyber security
- Set up integrated modern townships for sunrise industries including IT and BPO
- Creation of a National Knowledge Network (NKN)
- Initiate projects for developing quality human resource which is industry ready
- Initiate projects for gender empowerment and development of SCs/STs through IT
- Initiate programmes for development of quality faculties
- Encourage technology development in Indian languages
- Identify and encourage R&D in various thrust areas in the IT sector

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17.14 The development of IT in China and other parts of East and South-East Asia, as well as in Eastern Europe, are new challenges that the Indian IT industry will have to face. The cessation of certain income tax benefits to IT companies will add to the challenges. However, the Indian IT industry has considerable depth and maturity and has to find a way to maintain its leadership role. Companies in the IT sector, especially those in the hardware department, where Indian achievement has been limited, are in a position to avail of the benefits available in the SEZ scheme.

17.15 Some of the highlights of the specific initiatives taken under NeGP are given in Box 17.4.

17.16 The National Informatics Centre (NIC) has set up a country-wide communication network, NICNET, as the backbone network infrastructure for government informatics providing linkages to 611 districts covering 35 states and union territories (UTs). The NKN initiative to provide multi-gigabit connectivity to

all knowledge institutions in the country is also being implemented by NIC.

17.17 Activities related to Human Resource Development have been undertaken to ensure availability of trained human resource for the IT sector. Initiatives include identifying gaps emerging from the formal sector, planning programmes in non-formal and formal sectors for meeting these gaps. The Department of Electronics Accreditation of Computer Courses (DOEACC) Society was set up as an Autonomous Society of the Department to carry out Human Resource Development and related activities in the area of Information Electronics and Communication Technology (IECT). It is also a National Examina-tion Body, which accredits institutes/organizations for conducting courses in the non-formal sector of IT education and training. C-DAC's education and training programmes are based on finishing school model. Various courses offered by these institutions are designed to produce industry-ready professionals.

17.18 As the Indian IT industry is fast becoming a global IT industry hub, lack of adequate qualified researchers, engineers, and faculty is posing a major threat to the growth of the industry. There is an urgent need for strengthening educational institu-tions to meet this demand of the IT industry as well as the new institutions that are being established by the government. This can be achieved by producing

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Box 17.3
Key Achievements

Economy
- IT-ITES exports increased from US$ 31.1 billion in 2006–07 to US $ 46.3 billion in 2008–09, an increase of about 49 per cent.
- Production of electronics/IT hardware increased from Rs 66,000 crore in 2006–07 to Rs 94,690 crore (estimated) in 2008–09, an increase of about 44 per cent.
- Contribution of Electronics & IT-ITES Industry to GoP increased from 5.2 per cent in 2006–07 to 5.8 per cent in 2008–09.

Employment
- Direct employment in the IT-ITES sector increased from 1.62 million in 2006–07 to 2.20 million in 2007–08, a net addition of 0.58 million over last two years.

E-Governance
- Under the National e-Governance Plan approved by the government in May 2006, 76,100 Common Services Centres had been rolled out in 27 states by March 2010.

Education
- IT leveraged to extend reach and increase impact. Initial phase of the (NKN) started by upgrading 15 PoPs of NICNET at 2.5 gbps capacity.

Enterprise
- Open Source Software (BOSS) released.
- *Param Yuva* Super computing system commissioned.

E-Security
- IT Amendment (Act), 2008, enacted catering to emerging needs and developments.

Empowerment
- Software tools and fonts for all 22 constitutionally recognized Indian languages have been released in the public domain for free use.
- IT projects initiated to empower gender and SCs/STs and development of the North-East region.

<table>
<tr><td colspan="2" align="center">Box 17.4
Status of Major Schemes under NeGP</td></tr>
<tr><td>State Wide Area Networks (SWANs)</td><td>As of March 2010 SWANs in 19 states/UTs (Haryana, Himachal Pradesh, Punjab, Tamil Nadu, Gujarat, Karnataka, Chandigarh, Delhi, Tripura, Puducherry, Lakshadweep, Kerala, Jharkhand, West Bengal, Chhattisgarh, Uttar Pradesh, Sikkim, Maharashtra, and Orissa rolled out, while in the other states and UTs it is expected to be rolled out by September 2010.</td></tr>
<tr><td>Common Service Centres (CSCs)</td><td>As of March 2010, the number of CSCs rolled out in 27 states was 76,100. The remaining CSCs are expected to be rolled out by September 2010.</td></tr>
<tr><td>State Data Centres (SDCs)</td><td>SDC proposals of 31 states/UTs have been approved by DIT. Twelve SDCs are expected to be set up by December 2010 and the remaining shall get operationalized progressively by December 2011.</td></tr>
<tr><td>Capacity Building</td><td>As of March 2010, State e-Mission Teams (SeMTs) had been established in 22 states.</td></tr>
</table>

large numbers of high quality researchers and faculty. Accordingly, Department of Information Technology (DIT) has put forward a proposal for setting up of a ITRA programme with a budget outlay of Rs 149 crore for five years. The project will engage 40 participating institutions, 75 ITRA faculties, 25 adjunct faculty, and 480 ITRA PhD students.

17.19 The government announced the National Skill Development Policy, which has set a target of skilling 500 million by 2022. DIT has been identified as one of the agencies to implement the skill development initiative in the IT sector. Accordingly, it has a target of providing skills to 100 lakh persons by 2022. A strategy to scale up the existing training activities of DOEACC and C-DAC has also been drawn up.

17.20 In order to disseminate knowledge freely, DIT has taken up the digital library initiative and as part of this, copyright-free books and manuscripts are digitized and made available on the web.

17.21 Efforts are being made by the Indian Computer Emergency Response Team (CERT-In) to increase cyber security awareness, education, and skills in the country. Special training programmes are being conducted for judicial officers and law enforcement agencies.

17.22 Over the years, with several new forms of computer crime, misuse, and fraud taking place using computers and the internet on the rise, a need was felt to strengthen the legislation pertaining to information security. The Information Technology (Amendment) Act, 2008, upgrades the existing legal framework to instil confidence in users and investors in the area of information technology. This act inter-alia adds provisions to the existing Information Technology Act, 2000, to deal with new forms of cyber crime like publicizing sexually explicit material in electronic form, video voyeurism, cyber terrorism, breach of confidentiality, and leakage of data by intermediary and e-commerce frauds.

REMAINING PLAN PERIOD: AGENDA IN INFORMATION TECHNOLOGY

17.23 Priority must be given to the expansion and consolidation of IT hardware manufacturing clusters. The recommendations of the hardware task force need to be examined and those recommendations that are found acceptable have to be implemented with urgency.

17.24 The IT hardware manufacturing industry apparently suffers from disadvantages due to tax structures as well as the cost of infrastructure. These will have to be addressed. The Indian ICT industry must find a way to service the needs of various sectors from defence to social service programmes of the government like the Mahatama Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and the Integrated Child Development Scheme (ICDS) in a

way that meets the needs of the users. The development of the IT industry in India has been entirely built on the foundation of the satisfaction of its consumers across the globe. The same principle must apply for the expansion of IT activity and the acceptability of IT vendors for government programmes.

17.25 Training programmes for IT professionals under the Skill Development Mission must move with speed; cyber security systems and basic R&D activities need to be strengthened as well.

INDIA POST

17.26 The post office has been in the service of the nation for 150 years now and is positioned as an integral part of community life. Indian Post has a network of 1.55 lakh post offices spread across the country and constitute the largest postal system in the world. In addition, there are 5,460 Panchayat Sanchar Sewa Kendras to provide basic postal services in rural areas. The department aims not only at discharging its obligations under USO but also to effectively utilize

this network and reach out to provide value added services by developing appropriate linkages with agencies/organizations.

17.27 The major achievements and policy issues before the Department of Posts (DoP) are listed in Boxes 17.5 and 17.6.

17.28 The development of India's nation-wide IT base has made it possible for India Post to offer a range of e-enabled services to customers. An online domestic money transmission service is functional at over 1,400 locations across the country. The Electronic Clearance Service (ECS) provides an electronic method of effecting payments to customers. The department is offering ECS in all 15 RBI locations and 21 SBI locations for payment of monthly interest under the Monthly Income Scheme (MIS). Electronic payment (e-payment) services for utilities are available to customers at 8,457 post offices presently and will be soon extended to all 12,696 computerized post offices. The revenue from various premium and value added

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Box 17.5
Major Achievements of DoP during the Eleventh Plan

- The brand identity of India Post was enhanced with the launch of its new logo by the end of the first year of the Eleventh Plan, 12,696 POs, including those in rural areas have been computerized, 1,304 offices have been networked so far with the National Data Centre.
- Modernization of 1,000 POs and upgradation of core operations under 'Project Arrow'.
- Introduction of three freighter aircrafts in hub and spoke manner for carriage of mail between major cities and the North-East.
- Logistics Post Air Operations were launched through the India Post freighters at six centres, Delhi, Mumbai, Kolkata (including the North-East), Bangalore, Nagpur, and Chennai.
- Provision of GPS in mail motor vehicles in the North-Eastern region for better services and monitoring of mail transmission.
- Twenty-five new National Speed Post Centres have been established and 17 premium delivery centres for fast, dedicated, and effective delivery of Speed Post articles. Upgradation of 41 existing Speed Post Centres in the national network to handle additional traffic.
- Parcel services revamped across the nation.
- Establishment of Print to Post system at four stations to provide total mailing solutions to bulk customers by integrating printing, pre-mailing services, dispatching, and distribution processes.
- 121 Postal Finance Marts set up.
- Instant Money Order (IMO) extended to 1,705 centres.
- Established International Money Transfer arrangements with various countries. Postal Life Insurance (PLI) activity revamped and employing anganwadi workers as insurance agents in rural areas for faster roll out of PLI.
- Switching over to web-based software for faster delivery of insurance products.
- Sale of gold coins introduced.
- Payment of wages to NREGS beneficiaries (3.54 crore) undertaken.

Box 17.6
Important DoP Policy Issues during the Eleventh Plan

- Reorganization of DoP and expanding into newer business potential areas, such as global business, financial services, retail, and rural business
- Redrafting the Indian Post Office Act, 1898
- Induction of technology: Computerizing and networking at all POs, mail processing systems
- New division to be created to specifically target the rural postal network
- Transforming Postal Life Insurance into a commercial business entity
- Transformation of human resource in the department into a technology savvy business-oriented workforce
- Development of postal estates for commercial exploitation and revenue generation

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products increased from Rs 426 crore in 2003–04 to Rs 1,435 crore in 2008–09. India Post has actively pursued the government's objective of financial inclusion in rural India using its vast network. The total number of postal savings accounts increased from 1.2 million in 2003–04 to 20.5 million in 2008–09. The number of Rural Postal Life Insurance (RPLI) policies increased from 2.7 million in 2003–04 to more than 7 million in 2008–09.

17.29 The rapid growth in economic development has led to an increase in the requirement of postal services. The DoP has introduced franchise outlets in places where it is not possible to open departmental post offices. So far 850 franchisee outlets have been opened.

17.30 The DoP has been given the responsibilities to disburse wages to MGNREGA beneficiaries through the Post Office Savings Account. Starting with the Andhra Pradesh Postal Circle in 2006 the payment of wages under MGNREGA is currently operational in 19 postal circles across 21 states and more than 90,000 post offices. Nearly, 36 million MGNREGA accounts have been opened and approximately Rs 4,000 crore was disbursed in the first half of 2009–10. It is expected that up to 5 million MGNREGA accounts will be opened in POs during the remaining years of the Eleventh Plan. Old age pension is being paid through 2 million postal savings accounts in Bihar, Delhi, Jharkhand, and the North-East and through money orders in Jammu and Kashmir, Karnataka, Himachal, Gujarat, Rajasthan, and Tamil Nadu. India Post has tied up with SBI to sell its deposit and savings products through identified

post offices. Initially the five states of Andhra Pradesh, Jharkhand, Maharashtra, and Tamil Nadu are being covered in this scheme. It is expected to extend to 23 states and UTs.

INFORMATION AND BROADCASTING

17.31 The media sector has been one of the fastest growing sectors in the economy. Digitalization has promoted convergence of technology and thus created new business opportunities. The Eleventh Plan outlay for the ministry was fixed at Rs 5,439 crore.

17.32 Significant initiatives have been made by the Press Information Bureau (PIB) in dissemination of information relating to the government's flagship programmes. The Directorate of Advertising and Visual Publicity (DAVP) has initiated various programmes to disseminate information on the government's flagship programmes as well as on various issues covering national integration, communal harmony, and other elements of national and social importance with special emphasis on the North-East. The ministry is implementing various schemes in the film sector at a cost of Rs 450 crore in the Eleventh Plan, including the digital restoration and preservation of the cinematographic heritage of the country. All India Radio (AIR) and Doordarshan have Rs 1,618 and Rs 3,032 crore as approved expenditure respectively for the Eleventh Plan. AIR today has 231 stations in its network, which virtually covers the entire country in terms of both population and geographical area. Doordarshan has played an important role in bringing audio visual entertainment and news into homes and reaches 92 per cent of the population through

a network of 1,414 terrestrial transmitters. Further, Doordarshan has introduced Direct-to-Home (DTH) services to cover the entire country.

17.33 The government has constituted a sub-committee under the Information, Communication and Entertainment (ICE) Committee to work out the roadmap for going digital in line with international trends. Accordingly, targets for digitization have been worked out beginning with Delhi going digital by 2010 and shifting to digital transmission from the present analogue mode by 2017. Funds have been allocated on priority to both AIR and Doordarshan for this scheme; however, these could not be absorbed as the schemes are yet to get approval. The performance of Prasar Bharati needs to fast track its actions to achieve the set targets. The host broadcaster, Doordarshan is to provide TV coverage of the Commonwealth Games in High Definition TV (HDTV) mode and also provide games feed to the International community in HDTV mode. HDTV is quite new to India. It has been decided that expert production crews and required HDTV equipment (standard/high-end/ultra high-end) would be hired from the international market for which a scheme was approved at a cost of Rs 483 crore. With respect to HDTV broadcasting, the Cabinet approved Rs 165 crore for the creation of the necessary infrastructure in four metros for programme production and carrying out of terrestrial transmission. The scheme also envisages providing satellite transponders to link the four metros. Although terrestrial transmission in HDTV mode would not be possible for the Commonwealth Games, Doordarshan has assured that the people would be able to view the games in satellite mode.