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AN IT Agenda for India

5.1 INTRODUCTION

The importance of IT for India is well established. In the vast country like India, IT can play vital role not only in education and employment, but also in governance. India has to lay down its Agenda for progressive development of it in the country. The Government has taken serious note for the use of IT in India, in as much as a separate ministry of Information Technology has been set up. The use of computers in governance has been increased. A National Informatics Center has been set up for computerization of government departments. A systematic approach is being followed for IT development in India.

5.2 IT AGENDA FOR INDIA

Information technology (IT) is a synthesis of computers and communication. It is a technology which can be applied in any area of manufacturing or services and can bring tremendous benefits in terms of improvement in efficiency and productivity saving and energy and improve the quality of life. In the context of business, IT applications will result in greater profitability.

Nevertheless, in the developed countries, the debate about the so-called productivity paradox of the (IT) has been drawing attention. This is because IT helps in migration of
jobs to developing countries like India. After all, globalisation involves the movement across national boarders of four elements of the economy namely, physical capital in terms of plant and machinery, financial capital as invested in the capital markets, labour and technology. The movement of the labour therefore, is one of the consequences of globalisation. Information technology definitely is a catalyst for speeding up that element in the process of globalisation.

In the Indian context, wherever IT has been applied, there has been productivity improvement. For instance, the computerisation of the passenger reservation system in the railways is a case in point. There has been an increase of nearly 100% in the workload but the same staff is able to manage the work. Nevertheless, in the Indian context, applying IT faces a lot of problems. First of course, is the resistance of the organised unions. Secondly there is technophobia. Third is the cost of equipment, even through Moore's law ensures that the cost of the computers comes by half every 18 months as number crunching capacity doubles. Still, the fact remains that for a country of India's dimension, we have a long way to go. On the other hand, if we look at the extent of computerisation that has been done so far in spite of the tremendous boost given to this sector by Rajiv Gandhi perhaps the most technology minded PM this country ever had, we find that we have a long way to go. For instance, out of the one and half lakh post offices, hardly 1000 have been computerised. Out of 65000 branches of the banks, hardly 5000 have been computerised. We have spent more than RS. 400 crores on NIC but if we look at the area of computerisation within the Government departments, we find that we have still miles to go.

The basic issue before us is, we use IT as a lever for propelling India III a meaningful manner into the 21st century? Now, this will call for a look at the overall IT strategy we are going to follow. But before we go to tile strategy we will have to be clear about the objectives of Information Technology in the national context. I would suggest that we should think of using IT to tackle national problems. We can start with the problem of our population. We have also the problem of illiteracy. 54% of the world's illiterates are going to be Indian by the year 2000. We have the problem of public health because of the
large population. Of course, we have the problem of tremendous unemployment 
poverty. We must be able to think in each of these areas about how application of IT can 
help us to overcome the problems. This will call for firstly a 'strategy by which a 
technology like IT which has such a tremendous potential can be applied nationwide.

Immediately after taking charge of the office of ministry for IT and communication, 
Union Minister, Dayanidhi Maran has laid a 10-point agenda including focus on IT 
manufacturing and improving PC penetration in the country. Growth of broadband also 
gets priority, since the uses of Internet and broadband facility are still limited in the 
country.

"Manufacturing within India must be encouraged. Unfortunately, this has not taken place. 
There are perhaps reasons for this. We need to actively promote indigenous 
manufacturing. We can and need to go beyond the current tele-density levels of 7 in the 
country. In doing so, I would like to see that the Digital divide is minimised, if not 
removed. I believe that for the Communication and IT facilities to be truly relevant in 
India, they will have to touch the lives of villagers. There are still about 50,000 villages 
in India, which do not have telephone communication facility. I would like to see that 
they are all connected, preferably during the current year. Besides, the villagers, at least 
in the big villages, must also have access to Internet facilities, and to the benefits of Tele-
agriculture, Tele-Health and Tele-education. The spread of Internet in India has not been 
commensurate with the growth of telecom," stated the 37-year first time minister.

Maran's 10-point agenda

The Minister for Communication and Information Technology has announced a 10 Point 
Agenda for IT in India, which is as follows:

1. To achieve convergence of Information, Communication and Media 
Technologies. Prioritize PC penetration for Cyber Connectivity to every 
citizen.
2. To bring about transparency in administration and make government functioning more citizen-centric. To stress more on e-governance and expeditious implementation of a national e-governance plan.

3. To provide broadband connectivity at the most reasonable prices gets top most priority.

4. Plan to leapfrog current generation of mobile telephony to 4G. India is currently using the technology of GSM (2.5 G) and CDMA for mobile telephony. The 3G standard has been evolved, but has not proved cost-effective. India has an opportunity with its large market and high technical skills to be a significant player in this field. We are going to set up a national center for excellence in this area.

5. Plan to connect all ISPs in India to a national internet exchange in order to achieve efficient internet traffic routing, cost reduction and improve quality of service for the Internet users in India.

Four Internet exchanges points to be fully operationalised. Small and big ISPs to route their traffic through this exchange to ensure the security of domestic traffic. Currently, 25 ISPs are connected.

To bring about significant improvement in Indian Internet domain name with a greater market focus to proliferate the web. Towards this, major multinational companies to be encouraged to host their mirror sites in India and also encourage Indian enterprise to host sites to promote business and trade in India.


7. To concentrate on Cyber Infrastructure Protection and make effort to promote the use of Digital Signatures in the financial sector, judiciary and education.
8. To ensure that the program of Media Lab Asia of the Government focuses on the following areas of importance to the large Indian populace:

i. Providing seamless communication connectivity to rural areas and promoting value-added services and micro enterprises to double the village GDP in a couple of years.

ii. Extend quality healthcare services to remote areas using the technologies of telemedicine and internet access.

iii. Use Information and Communication Technology tools to improve literacy through distance education, inclusive processes and pedagogy.

iv. Promote development and availability of low-cost PCs and communication access devices to increase internet penetration 10-fold in a few years.

9. To accelerate dialogue with State Governments, linguists, R&D labs and Industry for increased deployment of language computing solutions in Government, industry and the society at large, particularly the disadvantaged sections.

10. To make India the world’s hub for outsourcing skilled manpower in the IT sector. National R&D institutions would be given encouragement to invest in R&D and bring about world-class technologies.

5.3 MODELS FOR A NATIONAL IT STRATEGY

We can consider some models for a grand national IT strategy. I would suggest three models.
Green revolution model
The first is the **green revolution model**. The green revolution in agriculture shows how Government identified a technology for tackling a national problem (shortage of food grains). Then the message was carried to the farmers nationwide by a series of demonstration forms. When the farmer accepted the model, there was a support system installed by the Government in terms of making the inputs available like hybrid seeds, irrigation fertilisers, pesticides. Finally when the yield came in terms of bumper crops, there was a price support mechanism to safeguard the farmer from the walking to miles. Can we think therefore, of IT also on these lines? We must bring to the notice of as many people as possible the tremendous potential IT has in every field starting from education, health, employment, industry and so on. We must then back it up with the tailored made Government policies which will make application of IT to find solutions to our national problems.

White revolution model
The second model could be the **white revolution model** Dr. Kurien and the NDDB have shown how India can become the biggest producer of milk in the world. This was done mainly through the cooperative movement and also intelligent use of the surplus equipment and milk power that were available from the European community. Can we think of using IT by the cooperative route so that especially in the social sector there can be better impact? When it comes to service of equipments, can think of mobilising surplus equipments which may be slightly obsolete but should be useful in the Indian context, so that IT progress is not halted for lack hardware?

Model for nuclear reaction
The third model is the model of a **nuclear reaction**. Unless a critical mass is reached the chain of action does not start. If we look at the extent to which IT is used, we find that many a time through efforts have been made for a long period of time and substantial amount of resources have been spent, ill the National context, they amount to very minuscule amount For instance, out of the 65000 branches of banks, only 5000 have been
computerised. Out of tile 1.5 lakh post office of which 25,000 are large post office less than 2000 are computerized.

When it comes to many of Government functions very few have been computerized. I have been connected with the effort at monitoring the use of computerization in Government and we submitted our first report in June 1997. A look at the recommendations made by the committee Expert Group on Computerization) will indicate the type of effort needed for spreading the computerization within the Government.

Yet another concept would be to try the mechanize 7s model of management in applying computerization in Government organisations. Dr. Dharmadhikari has come up with the following formulation

The effort at spreading information technology and using it as lever for development therefore, will have to focus on coming up with an effective strategy. Perhaps a combination one or more strategies some of which have been articulated above. There could be other strategies which could also be thought of and which could probably come in brainstorming session.

**5.4 FINANCING IT APPLICATIONS**

The next major area to be tackled is mobilisation of financial resources. We must see how the principle of enlightened self interest can be harnessed for this purpose. For instance, the MOP Local Area Development Scheme (MPLAD) places at the disposal at every MP one crore of rupees to be spent at their respective constituencies every year. So far as electronics is connected, the following five schemes have been approved by the Government. These are:

I Computers in every school

II An "information foot path" which is a combination of computer, modems and printers linking with different educational and other institutions.
III VSATs for developing electronic bibliographic based industry in small towns.

IV Citizen Band Radio to be put in transport systems and base station in hospital which can save lifes.

V Starting HAM Club in all schools to encourage children's creativity and Curiosity in science and specially communication.

Dr. Srikant Jichkar, MP from Nagpur took full benefit of these schemes and has come up with interesting results 15000 school children in Nagpur today are using computers and surfing the internet. Many of them are students below the 8th Standard. Even more important, Dr. Jickhar has put about 50 HAM sets in the Melghat tribal region 200 KM from Nagpur where 100's of tribal children who were earlier dying because of malnutrition and lack of timely medical assistance, are having their lives saved because of the HAM sets. This social consequence of high technology in backward areas is something, I never anticipated. So, it is possible to bring in concepts like the high tech tribal areas for better benefit.

5.5 DESIGNING A SINGLE SPEED INDIA

That brings us one of the fundamental problems in India. It is like snake whose head is in the 20th century and the tail in the 17th century. We should use IT to see that at least India become a single speed country geared to face the 21st century.

India is a two-speed country. At one level bright technocrats are making their mark in technology. At another level, 97% of our population does not speak English. India still lives in 600,000 villages, with just 30 percent population in urban areas. Can Information technology (IT) be a lever to move India to a single-speed developed nation? I think it is possible. The first step is to make computers operate in Indian languages. Today, to make this happen we have technologies like Graphic Intelligence Based Script Technology (GIST) developed by the Centre for Development and Advanced Computer software solutions developed the National Centre for Software Technology (NCST).
The second step is achieving total literacy. While we have world class professionals and technocrats, only 52% of India is literate. A 100 per cent literacy program is under way. Use of computers and interactive television can remove illiteracy fast. Dr. Thirumurthy of Vallabhbh Vidyanagar has developed a software that helps adult illiterates to learn the alphabet in one tenth the time it takes to learn from a human teacher. It can be used for multiplying manifold the potential of a teacher. In Mahabharata, Drona refused to teach, Ekalavya who went on to master archery in front of Orona's statue. Today Ekalavyas do not need such statues as interactive television technology is available. Indira Gandhi National Open University is using this technology in its long-distance learning program.

We should put rugged computers in all schools. One may wonder how when there are not even black boards in our schools, can we talk about computers? Further, electricity may not be available in all schools I will cite an interesting experiment. Kantisen Shroff of the Shroff Foundation Trust at Kalali, near Vadodara in Gujarat, generates electricity using bullocks- Shroff calls it Nandi Urja. After all, the bovine vagabonds that Gates saw in Delhi come in handy in generating rural electricity.

If we have computers in schools, we also need digital educational material. A massive effort at putting all educational material in different Indian languages into a computer readable form must be made. This will also create numerous jobs for the educated youth. Computers with CDROMs will bring a new world of knowledge to each school. 4.8 Am I dreaming? After all, India is celebrating the golden jubilee of its independence this year. Time we had a vision to break away from the vicious cycle of illiteracy, poverty and backwardness. Where is the money for all this to come from? This is the third step. Every MP gets a grant of one crore each year for development works in his constituency. This is called the Members, of Parliament Local Area Development Programme. The Department of Electronics got five schemes approved under this programme. MPs can use this fund for bringing IT in their constituencies.

There seems to be a ray of hope under the MPLAD programme. Dr. Shrikant Jichkar,
MP, a HAM enthusiast himself, has used the funds for setting up HAM clubs. Dr. Aram MP, made a VAST available to the Bharathiar University. May be there are other Mps who have taken a similar initiative. Another welcome development is Andhra Pradesh chief minister Chandrababu Naidu's efforts at computerizing state administration.

For creating jobs in database industry or translation of educational material into computer readable form in the different languages, funds from Prime Minister's Rozgar Yojana and Jawahar Rozgar Yojna can be used apart from the MPLAD funds. The industry also can be given tax incentives to fund some of these activities.

It can also be used to make democracy more meaningful in India, Indian democracy measured in terms of Abraham Lincon's definition is only a two thirds democracy. We have the govt. of the people and by the people but is it also for the people? For India to become a full fledged democracy, we need three things. First, a government that is transparent. Second, freedom of information and access to that information for the citizens and third the citizens are literate so that they are really effective. I have three ideas by which we can meet this requirements. Living in the age of the internet we can have democracy on line in India. As we are in the process of electing a new government, now may be the right time to articulate these ideas.

We are rated as the ninth most corrupt country in the world by the German NGO, Transparency International. There are three root causes of corruption.

(I) Scarcity of goods & services  
(II) Delay from red tape  
(III) Lack of transparency.

As one source of corruption is lack of transparency and lack of information, providing information should be at least helpful in partly reducing the scope for corruption. In fact, govt. itself is examining for more than a few years a Freedom of Information Bill the Shauri Committee also has given its recommendations. Let us hope in 1998 we may have a freedom of Information Act and this will partly help the citizens to overcome the
problems posed by the Official Secrets Act.

We have a problem with all these discussions about information being a source for reducing corruption and making the administration more transparent and simple. Just what is the information which people want? People interact with the Government organisations for different purposes may be to get a project cleared, or get a license, or a ration card. A lot of information is available with the govt. Thanks to more than Rs. 400 crores spent by the govt. in setting up the National Informatic Center (NIC) and its dynamic Director General Dr. Seshagiri, a lot of data bases have also been created. Nevertheless, the information which the public want is not readily or freely available.

We must break this logjam. I would suggest that NIC should come out of the closet. All the information that is available with the NIC should be made freely available to the electronic and print media. A healthy alliance between NIC and the media must be cemented by information and computer networks between them. If this is done, information will be available freely, to the media on line at the touch of a computer key.

If the India Democracy has to be really on line we have to build the National Information Infrastructure. Every public call office must provide access to the data with the govt. both at the center and in the states freely and in Indian Languages. But to achieve this meaningfully and also the type of growth rates the Asian Tigers achieved, (In spite of the current temporary set back on the currency front) education is the key. A nation, which is half illiterate, cannot face the challenges on 21st century. After all we are comparable in size to China, but look at the treatment given to China in the United States when Jiang Zemin visits and look at the treatment given to us.

Education is the route for a viable democracy as well as economic development. We have to focus on primary education. With my limited knowledge of the situation in Gujarat, I find that primary education and perhaps secondary education is highly politicalized at the stale level. Starting from the appointment of teachers and their transfers, and giving permission to start primary teacher training schools there is a very close linkage between
the local politicians and the vested interests. We fine therefore that even though attractive salaries are given to the primary school teacher, many of the single teachers schools are not effective. At the same time there are reports that even the poor parents want their children to go to school and study. They are prepared even to pay for it. It is here I think govt. should think imaginatively. After all, nothing happens in our country, unless there is a political will. Political will gets organised only under two circumstances. The first is when there is a crisis as in 1991. The second is where there is a perceived and immediate advantage in terms of electoral gains. After all, unemployment is a national problem, and to the extent we are able to provide avenues for removing unemployment it will be a politically, popular vote gathering measure. Look at the thousands of crores being spent under the Prime Minister's Rojgar Yojna. The Jawahar Rojgar Yojna, and the Integrated rural development programme (IRDP) Why not we say that the educated youth can become teachers, and give tuitions to the students in villages? They must be paid the same amount if not even double the amount, which is available under the various employment generation and poverty alleviation schemes. My reasons for linking this idea with these schemes are, (A) the funds sub optimally used today will be better used and (8) There will be also a direct link between efforts for removal of unemployment and illiteracy.

5.6 EMPLOYMENT GENERATION

Similarly we can think of IT as massive program for employment Generation. If we are able to build a national information highway, then we will need contents for the high way as hardly 3% of the population knows English, we must be able to massively spend and create programs where the unemployed youth can be used for inputting on the electronic media what is available in print in the Indian languages.

A massive program of translation of the information available in English Publication can be though of. In this way, we will be also enriching our Indian languages and also making the entire process of education richer. In addition to Government, I also discussed the idea with Dr. Kurien who says that NDDB has got Rs. 3000 crore cash and perhaps it can
be used for this purpose.

In fact, it will be useful to take sector by sector and see how IT can help the development of the country. For example, in the area of library, there could be effective networking. In policy making, we should learn from nature. After all, evolution has succeeded so far because nature follows simple, scientific route for progress. For example, a woman can be pregnant or not pregnant. She cannot be somewhat pregnant. There is no such thing as a calibrated pregnancy.

However, when it comes to policy making, we can indulge in hair splitting of concepts and talk about chimerical ideas like calibrated liberalization or a market plus economy and so on. All such concepts are basically efforts at compromise and compromise ultimately results in an unsatisfactory solution. A camel is after all, a horse designed by a committee.

5.7 STATUS IN TELECOMMUNICATION

Telecommunications is one of the prime support services needed for rapid growth and modernization of various sectors of the economy. It has become especially important in recent years because of enormous growth of Information Technology (IT) and its significant impact on the rest of the economy. India is perceived to have a special comparative advantage in IT and in IT-enabled services. However, sustaining this advantage depends critically on high quality telecommunication infrastructure. Keeping this in view, the focus of Tenth Plan has to be on the provision of world class telecommunication facilities at reasonable rates. Provision of telecom services in rural areas would be another thrust area to attain the goal of accelerated economic development and social change. Although the telecom network has grown rapidly in recent years, its growth needs to be accelerated further in the Tenth Plan. It is equally important to speed up structural changes in this sector in line with trends in other countries to ensure that telecommunication services are not only made available on the scale needed to sustain rapid growth in the economy as a whole but also that their cost
are in tune with the expectations of a modernising economy.

For a dynamic sector, reforms is a continuous process necessitated by dynamics of change including technological innovations. The telecom sector in India has been witnessing a continuous process of reforms since 1991. With the opening of international long distance services and internet telephony from April, 2002, the process of liberalisation and opening up the sector for competition is complete. Convergence of services is a major new emerging area and the telecom sector will have to address this in the Tenth Plan.

The New Telecom Policy (NTP) announced in 1999 modified the NTP, 1994 to take into account the far-reaching technological developments taking place in the telecom sector globally and to implement the Government's resolve to make India a global IT superpower. NTP, 1999 also seeks to solve problems arising out of the implementation of NTP, 1994. The objectives of the NTP 1999 are to:

- Make available affordable and effective communications for the citizens.
- Strive to provide a balance between the provision of universal service to all uncovered areas, including the rural areas and the provision of high-level services capable of meeting the needs of the country's economy.
- Encourage the development of telecommunication facilities in remote, hilly and tribal areas of the country.
- Create a modern and efficient telecommunications infrastructure taking into account the convergence of IT, media, telecom and consumer electronics and thereby propel India into becoming an IT superpower.
- Convert Public Call Offices (PCOs), wherever justified, into Public Teleinfo centres offering multimedia services like Integrated Service Digital Network (ISDN) services, remote database access, government and community information systems etc.
- Transform in a time bound manner, the telecommunications sector to a greater competitive environment in both urban and rural areas providing equal opportunities and level playing field for all players.
• Strengthen research and development (R&D) efforts in the country and provide an impetus to build world-class manufacturing capabilities.
• Achieve efficiency and transparency in spectrum management.
• Protect the defence and security interests of the country.
• Enable Indian telecom companies to become truly global players.

Ninth Plan Review

During the Ninth Plan period, a record growth rate of telecom services was achieved in the country. The network (equipped capacity) grew at an average rate of about 22 per cent. Growth of both cellular mobile phones and fixed line phones has been equally impressive. While private sector concentrated in cellular mobile phones segment, the growth in the Government sector was primarily due to fixed line connections. Against the target of providing 237 lakh Direct Exchange Lines (DELs), about 240.55 lakh additional DELs have been provided during the Ninth Plan. The cellular network has grown from a small base of 3.40 lakh connections to 64.31 lakh connections by the Plan end. As a result of this growth, the tele-density has nearly tripled from 1.57 at the beginning of the Ninth Plan to 4.4 as on March 31, 2002. Details in this regard are given in the Table below:

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<th>Network Expansion – Ninth Plan (Lines in lakh)</th>
<th>As on 31.3.1997</th>
<th>Net Addition – Ninth Plan</th>
<th>As on 31.3.2002</th>
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<td>Tele-density</td>
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The performance of the Public sector units, i.e. Bharat Sanchar Nigam Ltd. (BSNL) and Mahanagar Telephone Nigam Ltd. (MTNL), has been impressive. Against the target of
installing 185 lakh new connections in the original Plan (which was revised to 222.7 lakh in Mid-Term appraisal for BSNL and MTNL) and 237 lakh for the whole sector including private sector the achievement during the Ninth Plan is 240.55 lakh connections including contribution of private sector i.e. more than the target envisaged in the Ninth Plan Document. Ninth Plan also witnessed the beginning of cellular services by the public sector. MTNL launched its mobile services in Delhi and Mumbai as the third operator. Details of targets and achievements of the public sector during the Ninth Plan are given as under.

### NINTH PLAN (1997-02)

**PHYSICAL TARGETS AND ACHIEVEMENTS - Telecommunications**

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</table>
The performance of the private sector during the Ninth Plan has been a mixed one. While it did very well in the expansion of cellular network, the performance was not encouraging in the fixed line segment. Only about 5.9 lakh DELs have been installed against the target of 52 lakhs (original) and the revised target of 14.3 lakh. Constraints like licensing agreements, unrealistically higher licence fees, revenue share, right of way etc. have been basically responsible for the slow progress for the private sector.

For the Government sector, an outlay of Rs.46,442.04 crore was approved for the Ninth Plan to be financed basically from internal and extra budgetary resources (IEBR). This included a small budget support component of Rs.44.04 crore meant for financing the Plan outlay of regulatory bodies like TRAI and Wireless Monitoring Organisation (WMO) etc. The approved outlay for the Ninth Plan was only indicative in nature and the Annual Plan outlays were to be fixed on the basis of resources that might become available during the year.

The operational outlay for the Ninth Plan on the basis of the Annual Plan outlays approved on a year to year basis works out to Rs.84,783.90 crore including a budget support of Rs.208.20 crore. As against this, plan expenditure is expected to be Rs.69,407.62 crore. This gives a utilisation of 163 per cent of the originally approved outlay and 89 per cent of the approved operational outlay. The shortfall in expenditure in comparison to the operational outlay was basically on account of lower expenditure by MTNL and BSNL due to delays in taking up some new projects and reduction in cost of equipment. On the financing side, the IEBR generation was lower than targeted (compared to operational outlay) basically on account of reduced requirement for market borrowings. The shortfall in internal resources generation by BSNL and MTNL could partly be attributed to tariff re-balancing.

**Present Status**

The basic telecom services network has expanded from about 84 thousand connections at the time of independence to about 385.95 lakh working connections as on March 31
2002. Basic services network constitutes the bulk of the phones accounting for about 86 per cent of the total telecom network. The main features of the present telecom network are given in the table given below:

**Status of Telephone Network – As on 31.03.2002**

- Total number of exchanges - 35,023
- Number of rural exchanges – 26,953
- Total Fixed Telephone connections – 385.95 lakh
- Number of Cellular mobile phones – 64.31 lakh
- Trunk Auto Exchange Lines (TAX) – 34.27 lakh
- Tele Density - All India - 4.4
- Number of Village Public Telephones – 4.68 lakh
- Internet Connections – 38 lakh (as on January 31, 2002)

**Challenges Ahead**

With the introduction of competition in the market, the focus of planning needs to shift from the overall expansion of DELs and network to providing requisite policy framework for the sector/ market to grow as required and consistent with the overall policy objectives. In determining the appropriate policy initiatives and the relevant regulatory framework for this purpose, we need to bear certain factors in mind. The major factors/trends that merit consideration in this regard are given below:

**Factors and Trends Relevant for Future Policy Initiatives**

- Based on global trends and Indian experience, the rate of growth of cellular mobile services would continue to be higher for a number of years. Its two important implications are further lowering of average cost per line and cellular mobile/WLL-M becoming a major tool of expansion in rural areas.

- The capital requirement for investments in the next five years are expected to be lower than the present cost due to continuing decline in equipment cost as
well as lower network costs due to competition resulting from entry of infrastructure providers Railways, Power Grid Corporation, etc. and huge capacity addition by other players.

- A small portion of the subscriber base provides a large share of call revenue. High revenue subscriber category would form the core of competition among operators which may lead to a fall in the tariffs applicable to this type i.e. long distance calls. As a result, long distance tariffs may be even lower than those specified by the regulator.

- Margin of surplus will decline over time due to competition. However, the break-even revenue per subscriber will also be lower due to decline in costs.

- Data services are expected to grow much faster than voice telephony. This underlines the need in due course to focus on broad-band linkages to enable the provision of these services at the required rate.

- Due to large uncovered areas in rural and remote regions of the country which are also expected to be low paying as well, the commitments on account of USO are likely to be large.

- The trend towards convergence of services may lead to major changes in the structure of industry and markets.

Telecommunications is one of the fastest growing sectors in India. However, viewed in the context of global growth patterns and indicators, the sector is still in the early stages of development. Our tele-density was only 4.01 as compared to the global average of 32.78 (December, 2001) and 24.98 achieved by China. The comparative position of teledensity in a cross section of countries – both developed and developing – is given below.
# Telecom Development - International Comparison

(As on December, 2001)

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (In crore)</th>
<th>GDP per capita (US$)*</th>
<th>DELs (Fixed) (In lakh lines)</th>
<th>Cellphones (In lakh lines)</th>
<th>Total Phones (In lakh lines)</th>
<th>Tele-density</th>
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</table>

*Source*: World Telecom Development Report, 2002

*Figures of per capita income relate to the year 2000*
### TELE-DENSITY – INTERNATIONAL COMPARISON

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**Source:** World Telecom Development Report 2002.

# : Tele-Density works out to 4.4 on the basis of total telephone connections of 450.26 lakh including 64.31 lakh collector connections

The status of tele-density along with other indicators like per capita income, number of PCs, Internet users etc. for these countries may be seen in as under:
## TELECOM DEVELOPMENT – INTERNATIONAL COMPARISON

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (In crore)</th>
<th>GDP per capita (US$)</th>
<th>DELs (Fixed)</th>
<th>Tele-density</th>
<th>No. of PCs per 100 persons</th>
<th>Internet Users per 10,000 persons</th>
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**Source:** World Telecom Development Report 2002.

# : Tele-Density works out to 4.4 on the basis of total telephone connections of 450.26 lakh including 64.31 lakh collector connections (31.03.2002)

*: Figures of population and income (GDP) relate to year 2000.
The sector also needs, especially in terms of broad-band, to expand at substantially higher rates to meet the needs of related sectors like IT, I & B and other sectors of the economy. Keeping this perspective in view, the sector needs to be treated essentially as an infrastructure sector for the next decade or so. Once the required tele-density is achieved and the necessary support network has been created, the sector could be treated as service sector.

With a view to ensuring optimum growth in the coming years, Government's broad policy of taxes and regulation for the telecom sector is a promotional one. Mopping up of resources or revenue generation by the Government should not be a determinant of the policy governing the sector. The incidence of licence fees in the form revenue share and spectrum charges has to be guided by this principle.

The presence of multiple operators in various sectors implies a need to focus on the conditions that will enable these operators to function smoothly. Specific planning would be required to prepare the grounds for a multi-operator system to develop and the subscriber base to expand without impediments.

The Radio Frequency (RF) spectrum is a scarce natural resource. In accordance with international treaties, it has to be shared among a very large number of radio communication services and users - defence, civil, Government and private - based on the principles of co-existence and most efficient use. The increasing share of cellular mobile in total number of telephones points to a need for greater focus on the policy for allocating frequency spectrum. In addition to cellular mobile phones, which will have a large number of lines by the end of the Tenth Plan, frequency spectrum will be required also for the WLL used for providing basic services. The advent of new technology will also pose a significant challenge for the planners of radio spectrum. The increasing adoption of wireless technologies and the need to align with international standards would mean that there will be a need to address the shortage of wireless spectrum and to reconcile competing demands in certain frequency bands. The policy governing spectrum allocation and licencing has to be so designed that this scarce resource is used optimally and does not become a constraint for growth.
Though about 70 per cent of India lives in the villages and rural areas account for about 30 per cent of the GDP, the development of telecom facilities in these areas is far from satisfactory. The tele-density in rural areas is only 1.14 against 10.16 in the urban areas. Viewed from the general accessibility point of view also, about one-third of the total villages in the country are yet to be connected by basic telecom facility. As per the NTP-1999, the Government is committed to provide voice and low speed data services to all the remaining villages by 2002. With the corporatisation of DoT’s network by creating BSNL, rural telephony is no more primary responsibility of the public sector.

The public sector will have to continue to play a significant role in the provision of basic telecom services during the Tenth Plan. Out of about 828 lakh new connections envisaged to be provided during the Tenth Plan, the public sector units i.e. BSNL and MTNL are expected to provide 395.23 lakh additional connections. This assumes no budgetary support from the Government to BSNL for expansion of network in the rural areas. However, depending upon the availability of additional resources through USO support and other sources, public sector may be in a position to achieve much higher targets for major services during the Tenth Plan period. Cellular services are also expected to be the corner-stone of the public sector expansion plans in the Tenth Plan. As per the plans drawn by the company, BSNL is expected to be a major national player in cellular services.

Private investment is also expected to play a leading role in the expansion of telecom services during the Tenth Plan. In the area of value added services, the private sector would continue to play the dominant role. The quantum of investment by the private operators would basically get determined by the rate of return on such investments – both basic as well as value added services. Foreign Direct Investment (FDI) has also a major role to play in supplementing the resources of the domestic private sector as the scale of investment envisaged is large.
OBJECTIVES AND TARGETS OF THE TENTH PLAN

The Tenth plan policies and programmes are guided by the basic goal of creating a worldclass telecom infrastructure in order to meet the requirements of IT based sector and needs of a modernising economy on the least cost basis. Ensuring value for money to the consumers and easy and affordable access to basic telecom services to everyone and everywhere would be the other goal of policies to be pursued in Tenth Plan.

The major objectives envisaged for the Tenth Plan are:

(i) Affordable and effective communication facilities to all citizens.

(ii) Provision of universal service to all uncovered areas, including rural areas.

(iii) Building a modern and efficient telecommunications infrastructure to meet the convergence of telecom, IT and the media.

(iv) Transformation of the telecommunications sector to a greater competitive environment providing equal opportunities and level playing field for all the players.

(v) Strengthening R&D efforts in the country.

(vi) Achieving efficiency and transparency in spectrum management

(vii) Protecting the defence and security interests of the country.

(viii) Enabling Indian telecom companies to become truly global players.

The basic thrust of the Tenth Plan would be to provide world level services at affordable prices. With corporatisation of DOT's network, the network expansion/roll-out plans of both Government and private sector would be guided by the demand of various services.
In line with the broad objectives of the NTP, 1999 and the objectives envisaged for the Tenth Plan, the following specific targets are envisaged for the telecom sector for the Tenth Plan:

- To endeavour to make available telephones by and large on demand by end of 2002-03 and sustain it thereafter.
- To achieve an overall teledensity of 9.91 by 31st March 2007.
- Achieve telecom coverage of all villages in the country by December 2002 and provide reliable transmission media in all rural areas.
- Provide reliable media to all exchanges by the end of March, 2003.
- Provide high-speed data and multimedia capability using technologies including ISDN to all towns with a population greater than two lakhs by the end of March, 2003.

EXPANSION OF NETWORK DURING THE TENTH PLAN

The NTP, 1999 provides the basic framework for the future development and growth of the telecom sector in the country. One of the major objectives of the Policy is to make telephones on demand by the year 2002 and sustain it thereafter so as to achieve a teledensity of 7 by the year 2005 and 15 by the year 2010. Keeping in line with the above goals of teledensity, the country need to achieve an overall teledensity of 9.91 by the Tenth Plan end i.e. March, 2007.

To achieve the above target of teledensity, about 650 lakh additional connections may have to be provided during the Tenth Plan. Working on a different assumption of achieving a tele-density target of 11.5 by March, 2007, the Working Group on Telecom Sector for the Tenth Five Year Plan had recommended that 817.10 lakh new connections needed to be provided during the Tenth Plan. Keeping in view the present trend of growth, the Plans drawn up by the public sector and the availability of funds, the projections of the Working Group seem to be on the higher side.

Taking the above factors into account, the goal of achieving teledensity target of 9.91 by March, 2007 seems more realistic. The distribution among cellular, fixed and WLL based
limited mobility lines out of the net addition during the Plan period would depend upon the emerging behaviour of the market, availability of technological innovations and options and relative prices of equipment. As per the initial Plans drawn by Bharat Sanchar Nigam Ltd. (BSNL) and Mahanagar Telephone Nigam Ltd. (MTNL), the public sector is envisaged to provide about 395 lakh additional connections. This implies that remaining connections i.e. about 255 lakh would have to be provided by the private sector. The performance of the private sector is more encouraging; higher target of tele density could be achieved.

**Bharat Sanchar Nigam Ltd. (BSNL)**

Bharat Sanchar Nigam Ltd. (BSNL) came into existence on 1.10.2000 as a result of the reorganisation of the erstwhile Department of Telecom. With this, the reforms process of separation of policy formulation from service provision and regulation has been completed. This reorganisation had two important implications for BSNL i.e.

(i) BSNL has to act henceforth as a commercial entity; its investment policies among other things to be guided by profits/purely by commercial consideration.

(ii) BSNL would be subjected to additional financial liabilities like corporate tax, licence fees, payment of dividend etc. which were not applicable to erstwhile DOT.

Based on the resources availability of the company, it plans to provide 367.67 lakh new connections during the Tenth Plan. Keeping in line with the projected demand for mobile services, the main focus of the company is envisaged to be on expansion of cellular mobile services as the third operator in various circles.

The following table gives the broad details of expansion programme envisaged by the Company during the Tenth Plan:
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fixed and mobile subscribers access system, as well as high band with backbone systems would be an important part of the strategy for the Tenth Plan. Some of the major areas of thrust are:

- Intelligent Network Services
- GSM Personal Communication Services
- Third Generation Mobile Communication System
- Ka Band Satellite Communications
- Cell and Packet Switching Technologies for Voice and Data Convergence
- Ultra High Bit Rate Network Backbone
- Expansion Planning of Existing Wireline Network 8.5.67

Till September, 2000, the plan outlay of CDoT was financed out of IR generated by DoT. With the carving out of BSNL as a separate corporate entity, this mode of financing is no more available and the plan outlay is required to be funded through budgetary support.

R&D activity in any sector is very vital for ensuring future growth and hence needs to be supported fully. However it may be mentioned that as one of the major beneficiaries of the R&D of CDoT, the industry needs to be fully associated in financing its activities. Besides, C-DoT needs to focus more on generating internal resources through royalty, consultancy etc. to reduce its dependence on Government support.

THE PATH AHEAD

The Tenth Plan would endeavour to build a modern and efficient telecom infrastructure with a view to provide world class telecommunications facilities at affordable rates, meet the needs of convergence of telecom, IT and media and universal service to all uncovered areas. To achieve the above goals, the major initiatives/action points envisaged for the Tenth Plan are:

(i) To achieve a target of tele-density of 9.91 by March, 2007, about 650 lakh new telephone connections need to be provided during the Plan Period.

(ii) The telecom sector needs to be treated as an infrastructure sector for the next decade or so in order to achieve the targets of teledensity in line with the
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objectives laid out in the NTP, 1999. This is envisaged also to help achieving substantially higher rate of growth of broadband to meet the requirements of other sectors of the economy especially Information Technology and Entertainment.

(iii) Government’s broad policy of taxes and regulation for the telecom sector has to be promotional in nature with a view to ensuring optimum growth in the coming years.

(iv) Ensuring fair and timely interconnection in the multi-operator scenario is one of the major inputs for sustaining high growth.

(v) The policy governing spectrum allocation and licencing has to be so designed that this scarce resource is used optimally and does not become a constraint for growth. Spectrum pricing need to be based on relative demand and supply over space and time in a dynamic manner and should promote introduction of spectrum efficient technology. A significant chunk of available spectrum is being used by defence, police and para military forces.

(vi) Adequacy of funds has to be ensured for effective implementation of the USO.

(vii) The policy governing development of rural telecom services need to be promotional in nature with a view to boost teledensity in these areas in line with the objectives of NTP, 1999.

An outlay of Rs. 86984.00 crore including the budgetary support of Rs. 1500 crore has been approved for the Telecommunications sector for the Tenth Plan.

LATASET STATUS

1. The position of the number of phones and the growth therein is depicted in the following table:
2. The figures for tele-density based on provisional population of March 2004, March 2005, May 2004 & May 2005 are as follows:

<table>
<thead>
<tr>
<th>Tele-density</th>
<th>March'04</th>
<th>May'04</th>
<th>March'05</th>
<th>May'05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.08</td>
<td>7.34</td>
<td>9.05</td>
<td>9.17</td>
</tr>
</tbody>
</table>

3. The performance of various parameters during May 2005 as well as during May 2004-May 2005 is given in the following tables:

### A-Monthly Performance

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Description</th>
<th>Public</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No. of Telephones [Fixed Line &amp; Mobile] (in Lakh)</td>
<td>-5.82</td>
<td>3.72</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>Cellular Subscribers (in Lakh)</td>
<td>22.75</td>
<td>26.73</td>
<td>-7.03</td>
</tr>
<tr>
<td>3</td>
<td>No. of Telephones</td>
<td>4.15</td>
<td>10.15</td>
<td>10.15</td>
</tr>
<tr>
<td>4</td>
<td>Switching Capacity (PSUs) (in Lakh)</td>
<td>-2.43</td>
<td>9.05</td>
<td>0.00</td>
</tr>
<tr>
<td>5</td>
<td>Yielding Links - Fixed Phones (in Lakh)</td>
<td>0.24</td>
<td>0.11</td>
<td>0.15</td>
</tr>
</tbody>
</table>

### B-Cumulative Position

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Description</th>
<th>Public</th>
<th>Private</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No. of Telephones [Fixed Line &amp; Mobile] (in Lakh)</td>
<td>-2.59</td>
<td>3.27</td>
<td>0.37</td>
</tr>
<tr>
<td>2</td>
<td>Cellular Subscribers (in Lakh)</td>
<td>23.15</td>
<td>22.75</td>
<td>0.35</td>
</tr>
<tr>
<td>3</td>
<td>No. of Telephones</td>
<td>1.13</td>
<td>1.45</td>
<td>0.35</td>
</tr>
<tr>
<td>4</td>
<td>Switching Capacity (PSUs) (in Lakh)</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>5</td>
<td>Yielding Links - Fixed Phones (in Lakh)</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Note: For April'04 & April'05, data for April'04 is not available yet.
5.8 PRIVATISATION OF TELECOM

Experience of India in privatization of Telecom highlights the interesting interplay of various forces in the reform process of the important sector of the economy. It also highlights the difficulties which have to be overcome before the reform process is completed. Telecommunication is an important sector of the economy. In fact, a 1% increase in telephone density leads to a 3% increase in the GDP. Telecom, therefore is an important infrastructure for the economy. What is more, in today's highly competitive global market, time is an important element and telecommunication contributes to the increase in the velocity of business.

After Government adopted the economy liberalization polices in 1991, it was obvious that telecommunication must be a sector that will have to be looked into and reformed to be in tune with the changed environment. In fact, the NTP which was announced on 13th May 1994 draws attention to the link between the broad economic reform process and the need for reforming the Telecom sector.

Telecom in many countries has been perceived to be a natural monopoly and has been in effect a Government monopoly. India was not an exception. In fact section 4 of the Indian Telegraph Act, 1885 very clearly confers monopoly rights on the Government even though there is an option for licensing other players also. In fact, in the 40s there were private parties which are licensed in the Telecom sector.

The process of Telecom reform after 1994 has been not very happy. In fact, the entire reform process became focused on tenders and when the tenders were opened, the process became license fee centric. In fact, U18 lack of transparency of the whole process, led to the so called Telecom scam. The net result of the focus on the licensing fee was such that abnormally highly license fee was offered by the bidders in an anxiety to get into this sector. Today, for 11 of the 21 Telecom circles there are no players at all in the telephony and in the remaining circles also there is not much progress on the ground.
A major requirement for any reform process especially when a govt. service gets open to the private sector also is to have a regulatory authority who will act as an neutral and effective empire. Unfortunately, in India, the Telecom process was first started and the regulatory authority, TRAI came into being only in Feb. 97. It was like starting a cricket match and then sending the umpires after few overs have been bowled. Nevertheless, we see today the conflict between the DoT and the TRAI. Their roles have to be defined. The TRAI has tried to assert its authority under section 11(1)b for example and stayed the internet policy of the DoT. This situation requires to be resolved quickly.