INDIA - MARKET SECTOR PROFILES

TELECOMMUNICATIONS

Background

The Government of India has accorded top priority to the expansion of its telecommunication sector, as India emerges to potentially become one of Asia's next economic success stories. The earlier development of this sector, based on imported technologies, had been slow and generally did not keep pace with the rest of the world, because:

- *Old generation technologies had been offered by international suppliers.*
- *There were inadequate investments in infrastructure and product diversification.*
- *There was a very bureaucratic implementation of new networks and India lacked the expertise to implement them effectively.*

The telecommunication and electronics industry is concentrated mainly in the southern part of India, although some of the terminal and transmission equipment manufacturing units were set up later in other parts of the country. Indian Telephone Industries (ITI) was set up in 1948 and has been a major supplier of telecommunications equipment to the Department of Telecommunications (DoT) since then.

To promote the growth of the telecommunication sector, the Indian PTT was reorganized and a separate Department of Telecommunications (DoT) was set up in 1986. Further, to provide policy direction to the total telecommunication needs of India, the Telecom Commission was set up in May 1989 with one Chairman, four full-time Members and four part-time Members.

In 1981, the government decided to introduce digital switching and transmission. In the early 1980's, India entered the optical fibre field. The Centre for Development of Telematics (C-DoT) was established in 1984 to develop indigenous equipment for large digital main automatic telephone exchanges (MAX) up to 20,000 lines, and 512 line rural digital automatic telephone exchanges (RAX). Mobile telephones and paging services were started in 1987 and cellular telephones were introduced later in metropolitan cities on an experimental basis.

India also entered the field of satellite communications a decade ago. The Department of Space implements and monitors all space communications and remote sensing programs. The main thrust of this program has been to establish national networks using space technology for television, telecommunications, meteorology, and remote sensing for the survey, monitoring and management of India's natural resources and environment.

The telegraph network in India is still primitive. A decade ago the Store and Forward Telegraph (SFT) system was introduced. The telegraph network is owned and operated by DoT.

The Department of Electronics (DoE) has been entrusted with the development of electronics, control instrumentation, robotics and artificial intelligence. All imports in these sectors are regulated by the DoE.

Leading Indian Companies

ITI started its production with strowger equipment, and later switched over to Pentaconta cross-bar equipment and digital E-10B exchanges. ITI also manufactures various types of transmission and terminal equipment. Bharat Electronics Ltd (BEL) and Electronic Corporation of India Ltd. (ECIL) manufacture microwave systems and telex equipment in collaboration with Siemens.

In the last few years, some state governments have also set up public sector companies to manufacture and market telecommunication and electronic equipment, and components. The communications needs of the Indian Armed Forces are also being met by indigenous sources, namely BEL, Hindustan Aeronautics Ltd (HAL), ITI and ECIL.

For telephone instruments, three technologies - Siemens, Ericsson and Face of Italy - have been standardized. Several companies are making telephone instruments under licence, using the above technologies and production is adequate. For the PABX, three technologies have been standardized. These are: OKI, GTE and Jeumont Schneider.

Research Centres

R & D activity in India basically started as an import substitution exercise for items having a sizeable domestic demand. R & D in the telecommunications sector has been primarily undertaken by the Telecom Research Centre (TRC). Industrial research in this field has also been undertaken by the Central Electronics Engineering Research Institute (CEERI); the National Physical Laboratory (NPL), and the Railway Design and Standards Organization (RDSO). More recently, TRC was merged with the C-DoT. The Telecom Engineering Centre (TEC) has been assigned the mandate of providing high technology inputs to the DoT.

The Indian Space Research Organization (ISRO) undertakes research and development activities in space science and technology. The United Nations Development Program (UNDP) and its technical consultant, the International Telecommunications Union (ITU), have provided support in developing the facilities for the Satellite Instructional Television Experiment (SITE). India has benefitted from the help provided by a number of countries, particularly Canada, UK, U.S.A., Germany, the erstwhile USSR, France and Japan for various space projects. The priority given to R & D has enabled India to develop several sophisticated technologies indigenously and in the process, strengthening the local industrial base.

R & D activities in electronics are also being undertaken by ITI, HAL, BEL, ECIL, as well as by educational institutions such as the Indian Institute of Technology (IIT), the Centre for Artificial Intelligence and Robotics, the Centre for Information Research, the National Centre for Software Technology, the Centre for Development of Advanced Computing (CDAC) and various universities. The R & D needs of the Indian Armed Forces is the responsibility of the Defence Research and Development Organization (DRDO), which is a part of the Ministry of Defence. R & D activity in the field of medical electronics is mainly being carried out by the Central Scientific Instrument Organization (CSIO), the Defence Bio-Engineering and Electromedical Laboratory (DEBEL), the Bhabha Atomic Research Centre (BARC), the Indian Institute of Technology (IIT), and the Indian Institute of Science (IISC).

Government Institutions and End Users

The operation and maintenance of public telecommunications services is the responsibility of the DoT. In the last few years, however, some of the bulk users of telecommunication services, have built up their own networks. As a policy, they are not linked to the public network. The largest amongst such networks are those being used by Indian Railways. Others include: POWERNET - the network for the power sector operated by the Central Electricity Authority (CEA); OILNET - the network for the oil sector commissioned by the Oil and Natural Gas Commission (ONGC); and SAILNET - the network for the steel sector run by the Steel Authority of India Ltd (SAIL). An autonomous corporation called the Mahanagar Telephone Nigam Ltd. (MTNL) was carved out of the DoT a few years ago to provide telecommunication services for Delhi and Bombay. Other major metropolitan centres will eventually be covered under MTNL.

The public sector accounts for the bulk of the purchasing requirements in India for telecommunication, electronics, process control and instrumentation equipment. While core sectors - including defence, petroleum and petrochemicals, railways, civil aviation, energy (both thermal and hydro-electric), and heavy engineering - still constitute 80 percent of the demand, a small but nevertheless very strong private sector is emerging as a potential buyer.

Entering the Market and Competition

Major suppliers of telecommunication equipment are NEC, OKI, Fujitsu, Mitsubishi, CIT-Alcatel, STC, Farinon and Ericsson. Communication equipment suppliers have traditionally been Marconi, Motorola, NEC, Radifon, REPCO, and Racal. Communication system equipment suppliers have been GTE, CSF, Thompson, Olivetti, Nexdorf and Racal Milgo. The role of foreign companies in this sector falls within the following areas:

- Supply of equipment against competitive global tenders;
- Setting up of joint ventures with equity participation;
- Transfer of technologies against term or royalty payments;
- Supply of equipment against long term loans;
- Training in high-technology areas; and
- Consultancy services.

The first area will remain open as long as the government needs to import equipment, which in the past has been largely funded by the World Bank and other international financial institutions. Multinational companies have been successful in India for a long time and have made concerted efforts to carve out a niche for themselves in a highly competitive environment. Close monitoring of frequent policy changes have enabled them to establish long-term business strategies. They have now also capitalized on the government's economic liberalization policies.

Long term collaboration agreements have been executed for most of the equipment required by the DoT. Imports have been generally made on an ad hoc basis. Indigenous production has been increasing by almost 15 percent per annum. In 1986, the value of equipment manufactured in India was estimated at US $ 650 million, which increased to US$ 800 million in 1987 and to US $ 1 billion in 1989 (latest statistics); a trend that compares favourably with global trading in telecommunication equipment.

The multinationals consider this 15 percent annual growth a vital indication of the potential of the Indian market. They recognize that India is one of the last markets of this magnitude in the world that is now being opened up. In fact, the Indian market should witness a five-fold increase in imports in the near future. To reach the target of 20 million telephones by 2000, India will need around US $ 500 billion worth of combined investment from domestic and international sources.

Market potential exists for Canadian industry in the following areas: packet switching; cellular telephone services; paging systems; optical fibre; international links; V-SAT; digital microwave systems; RF Links; satellite terminals, and facsimile switches.

Canadian companies will need to make serious efforts to capture a market share in India. They should participate in global tenders, establish long term collaboration arrangements, including joint ventures and technology transfers. As there is vast potential in almost all the sub-sectors, they must also have effective local representation.

Local Representation

The telecommunications sector in India is competitive and volatile, depending on political, bureaucratic and administrative considerations. Local representation in India is critical to ensure early market intelligence, appropriate follow-up strategies, and a long-term presence in the market. The ideal arrangement is a collaboration with an Indian company as a licensing recipient or as a joint venture partner.

It is generally not possible for Canadian companies to obtain tender documents from India without local assistance. This is needed to build contacts and relationships in an environment which, while changing, is still bureaucratic and slow, and needs personalized attention. The Canadian High Commission in New Delhi and the Canadian Consulate in Bombay can assist in identifying suitable local agents and/or joint venture partners.

Recent Developments

India will spend US $ 1.93 billion in 1993-94 to install new telephone lines. During 1992-93, 1.7 million new lines were installed and 500,000 lines were replaced at a cost of US $ 1.45 billion. India has a mammoth task before itself to provide more extensive telephone coverage for its population of 880 million people. The government plans to increase the number of telephone lines from seven to twenty million by the end of the decade. DoT recently issued letters of intent for joint ventures proposed by Fujitsu, Ericsson, and Siemens, for each to set up one telephone exchange with 100,000 subscriber lines.

Major New Policy Initiatives

In view of its liberalized industrial policy, the government has taken several new initiatives to expand and modernize the telecommunication network in India. For example, in a major policy change, the government opened up the cellular telephone and paging sectors to private sector operators. Other reforms include automatic approval for up to 51 percent foreign equity participation in new ventures; and private sector involvement in value-added services, the provision of network management services for the national and metropolitan networks, and EDI and voice-mail services.

Customs duties have also been drastically reduced. For example, capital goods for export-oriented production can be imported at 15 percent duty with an export obligation of four times the CIF value of exports over 5 years; there is 25 percent import duty on specified capital goods and project imports; the import of components without a license is permitted subject to actual user condition; and import duty on raw materials for the manufacture of optical fibre has been reduced from 90 to 20 percent.

At the end of the Seventh Plan in 1989-90, the telephone density in India was 0.52 per 100 people. During the Eighth Plan (1992-97), India aims to target six telephones per 100 people. It also plans to provide a telephone facility at every village in India. The government is planning to replace all the existing mechanical exchanges with electronic exchanges (for an overview, see the attached table on the proposed targets for the Eighth Plan for this sector).

In summary, two factors will govern further developments in India's burgeoning telecommunication sector in the near future:

- the increasing privatization of telecommunication services, and
- new policies that will likely radically alter the regulatory environment for this sector.

Canadian Success Stories

The following is a listing of recent Canadian activity in the telecommunication sector:

- SR Telecom entered into a technology transfer agreement with WS Telesystems Ltd of Bangalore for the manufacture of SR-100 subscriber radios in India.

- Tele-Direct, a subsidiary of BCE, has entered into a joint venture with M & N Publications to publish the Yellow Pages directories in Bombay, New Delhi and Madras. M & N was awarded this contract by MTNL (Mahanagar Telephone Nigam Ltd) for a period of five years, beginning in 1993.

- The Department of Telecom tender for the provision of paging services in 27 Indian cities drew 83 bids, later shortlisted to 19. Eighteen out of the 19 shortlisted bidders specified equipment from Glenyare Electronics. MTNL has recently installed a 5,000 line Glenyare paging system in Bombay on an experimental basis.

- The Department of Telecom (DoT) had selected eight companies to provide cellular telephone networks in four Indian cities. Tata Cellular Ltd, of which BCE of Canada is the joint venture partner, had been one of two companies originally selected for New Delhi. This award was recently reversed by the DOT, however Tata Cellular has initiated a court action with the Supreme Court to contest this decision.

- An eight-member Rural Telecommunications Mission from Canada visited India, October 10-16, 1993, and held technical seminars in Delhi, Bombay and Bangalore.

India offers excellent market potential for Canadian companies to enter into joint venture and technology transfer arrangements with Indian firms in the telecommunications sector. The Canadian High Commission in New Delhi and the Canadian Consulate in Bombay are prepared to fully assist Canadian companies in exploring new market prospects.

PROPOSED TARGETS FOR THE EIGHTH PLAN (1992-97)
TELECOMMUNICATION SECTOR

NAME OF SCHEME	STATUS as of 31.3.92	PLANNED 1992-97	PROJECTED 31.3.97
Local Telephone System			
Switching capacity (million)	6.77	9.30	16.07
Direct Exchange Lines (million)	5.77	7.50	13.27
Long Distance Switching			
TAX Capacity (Lines)	196,000	272,000	468,600
Long Distance Transmission			
Coaxial Cable Systems (R Km)	27,420	3,000	30,420
Microwave Systems (R Km)	36,786	20,000	56,786
UHF Systems (R Km)	21,157	150,000	171,157
Optical Fibre System (R Km)	8,810	20,000	28,810
Others			
LDPTs	38,952	338,000	377,000
Telex Capacity	54,660	31,200	85,860

SOURCE: Eighth Plan Document, Government of India