CHAPTER - VI

The Economic Impact

The Human Side

"Man's finest work bear the persistent marks of pain." What would there be in a story of happiness? Only what prepares it, only what destroys it can be told. I have now told you what prepared it" said Andre Gide in L'Immoraliste. It is perhaps sad to reflect that disasters of one kind or another will go on affecting the population of our planet. Vagaries of nature, riots and agitation blemish the path of peace and prosperity. The work in the development of new communications technologies has gone on despite such vicissitudes and helped lessening the impact of tragedies on the lives of ordinary people.

The phenomenal growth of the Telecom Sector in the past decades has in turn, resulted in increased productivity and job opportunities in various sectors of the economy. Each year on the 17th of May, the International Telecommunication Union (ITU) celebrates World Telecommunication Day to commemorate its founding in Paris 132 years ago in 1865.

For World Telecommunication Day, 1997 the Council of ITU had chosen the theme - "Telecommunications and Humanitarian Assistance" with the aim of highlighting the growing role of telecommunications in disaster management and relief operations.¹

Telecom For Maritime Safety

Almost since its earliest days, telecommunications has played an important role in disaster relief. The ability to communicate over distance - provided initially by the telegraph and later by the invention of the telephone and the development of radio communications - made telecom ideally suited to use in emergency situations, both in
reaching help to those involved and in passing on information to the outside world. Perhaps one of the most poignant early examples can be found in the tragedy surrounding the sinking of the Titanic on April 14, 1912. Radio communication technology was instrumental in soliciting aid from the nearby vessels California and Carpathia, which were able to proceed for instant rescue. Sadly, many more lives could probably have been saved had other vessels in the vicinity been equipped with radio communication systems. As it was, they remained oblivious to the tragedy unfolding around them that night and some fifteen hundred people lost their lives.

The impact of the Titanic disaster on maritime communications was enormous. That same year saw the adoption of the first International Convention for the Safety of Life at Sea, and later the Radio Regulations were amended to include mandatory operational requirements and provisions on maritime distress communications. At the same time, ITU was nominated as the watchdog for the correct application of maritime safety procedures.

The radio-communications technology also plays a vital role in emergency relief operations on the ground. Teams of dedicated field workers from a wide range of national and international aid agencies work tirelessly to alleviate the suffering of those caught up in natural and man-made disasters be it in mines or in earthquake. And the mainstay of a great many of these operations continues to be the messages received and transmitted by simple radio systems. This is especially true in areas of poor or unreliable telephone infrastructure, such as in geographically remote regions or dense interiors.

The role played by the amateur Radio Service, in particular has been invaluable over the years, providing, as it does, worldwide decentralized radio network manned by highly competent operators. The planned introduction of International Amateur Radio Licence by the International Amateur Radio Union should further facilitate international assistance during humanitarian relief operations.
Mobile Telephony

Today, the rapid development of mobile telephony has opened up new ways of communicating with people struck by disaster or working in a disaster zone. While they will never replace radio in certain situations, mobile telephones have become indispensable as a means of sending information to victims. They are also invaluable tools for relief workers, who are able to coordinate team activities while in the field and quickly mobilize emergency actions such as evacuations reaching food and medicine. The ability to provide communications on the move and to ensure continuity of communications despite localised damage to the ordinary telephone network, have made mobile telecommunications technology a great working tool in the field of humanitarian aid.

Low and Medium Earth Orbiting Satellites

But even mobile telephony systems cannot help where there is widespread damage to the telephone network, which can occur following a natural disaster, such as cyclone or earthquake or a man-made one, such as a war. To deal with these kind of crises, most probably authorities have to turn to a new breed of telecommunications system, based around constellations of Low and Medium-Earth-Orbiting Satellites. Several of these new systems are due to be launched over the next five years or so, and they bring with them the promise of seamless global mobile telephony, regardless of the whereabouts of the user or the existence of on-the-ground telecommunications infrastructure. When fully implemented, they could prove to be a great asset in the effort to save lives and ease the suffering of those affected by large-scale disasters.

The importance of telecommunications systems in the area of disaster relief, as well as the usefulness of new kinds of telecommunication technologies in disaster warning and prevention, was recognized by the ITU Plenipotentiary Conference in Kyoto in 1994. The conference adopted a special Resolution which recommended the establishment of an International Convention which had as one of its aims, the removal
of regulatory barriers applying to telecommunications equipment which can sometimes interfere with international relief operations.

**Mobile Satellite Communication Network**

Mobile satellite communication networks and advanced technologies such as the satellite-based Global Mobile Personal Communications Systems are excellent tools for effective and coordinated management of international humanitarian aid. In addition, dramatic improvements in traditional means of communication such as short-wave radio, mean that this technology continues to play a valuable role in disaster relief. These communication tools are also indispensable for the personal safety and security of aid workers, who often risk their lives in the dangerous situations created by disasters. Good progress is also being made on ways to improve availability of such tools to governments and relief agencies by the removal of regulatory barriers, which in many cases still restrict the full use of the valuable new systems which technological advances have made available. The spirit of cooperation is an important step towards the optimum application of telecommunications technology in the most noble of causes. The alleviation of human suffering caused by disasters is fundamental to this.

**In War and Peace**

Ironically wars often stir the best creative genius in man. Greatest of human achievements were also at times the product of war and trying times. Indian Telecom too has weathered many plains and plateaus. The challenge of times propelled such accomplishments that make any nation proud. An efficient and well developed communications system is a basic requirement in wartime. Telecommunication played a vital role in meeting defence needs of the country. Really the telecom rose to the occasions and provided crucial telecommunication link in war times.
Srinagar, 1947

Immediately after India gained Independence in 1947, the Telecom Department was called upon to provide support to the Army for its operations in Jammu and Kashmir, Hyderabad and Goa. On 26th October 1947, a large group of armed tribesmen attacked J&K and reached the outskirts of Baramula. Army was rushed to Srinagar before it was too late, thanks to a telephonic distress message and the Government of India was called upon to defend the state and the state was finally acceded to India. The communication facilities were very poor and inadequate. The only communication link available was the Civil Aviation wireless between Srinagar airfield and Delhi. Within 24 hours of attack however a telegraph circuit was established from Amritsar to Srinagar. The circuit was later on converted into an improvised speech circuit. In Srinagar valley the department provided communication facilities in most difficult areas. The department even laid a line from Bandipur to Gureze passing through 12000 ft. height. In Srinagar-Uri sector the laying and maintenance of field cable in the forward areas was done by the department in a show of exceptional courage.

Chinese Attack 1962

Similarly in November, 1962 during the Chinese aggression the department played a crucial role in the North East linking Delhi, Lucknow and Allahabad to Gauhati and Tejpur. The communication network in Assam was not upto the mark. The telecom staff worked day and night to install PABXs, military trunk boards and other links. Later on it operated the communication links for civil and army authorities. Signal centres at Gauhati and Siliguri were set up and short distance trunk lines were constructed. With in 24 hours of the army vacating Tejpur, the local population was moved out. However, the telecom staff continued to perform their duties even on empty stomach. Such was the patriotic fervour and devotion to duty. It was only when the water supplies were cut, the staff was asked to go back to Gauhati. But immediately after reaching Gauhati they were moved back to Tejpur to take charge and to restore the communication system yet
again. The officials of department did a commendable job and came out with flying colours.

**Chhamb and Ladakh 1965**

Within a span of 20 years since independence, India faced the third war again. Pakistani forces attacked in the Rann of Kutch area. The nearest telecom centre was at Bhuj. To stop this intrusion, communication was established quickly to the forward areas of Vigakot. Vigakot was then directly extended to Poona over telephone channel. Within 48 hours of start of operations, a point to point circuit was provided from Ahmedabad to Barmer Signal Centre.

Pakistan’s repeated bid to seize Kashmir, again failed. When this attempt failed, Pakistan, decided to mount a full fledged attack in Chhamba area on September 1, 1965. The Command headquarters had to be immediately shifted from Simla to Ambala and Corps head quarters to Rayya - a small place without any telecom facility. A carrier station was set up at Rayya by working day and night. Signal Centre was also established by providing speech and teleprinter line to all important centres of operations. There was a constant demand for new circuits every day and the department was able to meet this demand on top priority. During this period, first co--axial underground system was commissioned in Punjab between Jalandhar and Ambala and this came very handy for providing communication link to the vital airfields. There was occasion when the timely restoration of the communication link enabled the forces to reach air support in time which proved disastrous for the enemy. When second front was opened by Indian Army in Dera sector, the Department provided full maintenance support and helped the army in laying cables in the forward areas.²

Then came the mother of all wars India fought so far. During the period between April to May 1971, all telephone exchanges, telegraph offices and post offices in Shillong telecom division were subjected to artillery firing from across the border on
East Pakistan side. At the eleventh hour the IVth Corps Headquarters was shifted from Tejpur to Teliamura. There was some problem in providing voice and telegraph links to keep Corps Headquarters informed. A multi-channel VHF communication was established between Teliamura and Shillong with a repeater at Cherapunji within a record time. In the beginning a temporary building was erected at Teliamura and Cherapunji repeater was housed in tents. In spite of heavy rains, the line was commissioned in a very short time. Other facilities like T-43 trunk boards and PBX exchanges were also extended by working day and night in less than a month. The Teliamura and Shillong link was the lifeline for the Army in the Eastern sector. Some staff of the department was also attached with the Army and the staff worked with zeal and enthusiasm round the clock for erection of wires, planting of poles and installing links.

**Indo-Pak War 1971**

One three channel group carrier system was installed between Calcutta and Binapole during first week of December, 1971. After establishing communication from Jessore to Calcutta the staff was busy in providing additional circuits. Khustia was connected to Calcutta via openwire line from Khustia to Ranaghat and Ranaghat to Calcutta on newly commissioned ITI RE equipment. The circuits were further extended to Dacca on the existing Microwave system there. A standby communication system was established from Dacca to Delhi through the land line from Shillong. Similar communication facilities were provided to Air Force at Shillong and Silchar. Communication facilities were also provided on top priority in refugee camps near Dharamnagar and Silchar. The Telecom departments heroic role in wartime communication would remain for ever a saga to be written in golden letters.³

The Kashmiri militants blew up the Micro were Repeater Station at Benkote in Kashmir on 10th October, 1992. This twenty disrupted the vital communication link between Kashmir and the rest of the country. To restore communication with the valley
the Satellite Project Circle at New Delhi was asked on 11th October, 1992 to set up a satellite link between Kashmir and the rest of the country. As a result a transportable satellite terminal was immediately moved on 12th October, 1992 from Secunderabad in Delhi to Srinagar where it reached on 14th October, 1992. A Crack team of five engineers and dedicated personnel led by the Chief General Manager Satellite Project, Delhi, undertook the task in all earnest. This team worked day and night under heavy security escort and restored the communication on 19th October, 1992. This was another remarkable feat in valour and speed.

Similarly a devastating earthquake hit Latur and Osmanabad Districts of Maharashtra on September 30, 1993. Due to this telecom systems were affected in many places. Killari Exchange (Latur SSA) building was damaged to a large extent. Subsequent to this the department rushed facilities and personnel set up 29 hotlines.

If also provided 7 circuits from Killari to various stations like Pune, Latur, Prabhadevi and a number of casual connections were also given Telecom Centres opened with STD, PCO, Trunk PCO, FAX and Telegram Booking at Killari (in Latur SSA) and Omerga (in Osmanabad SSA).

The facilities set up included Camp Trunk Exchange at Killari, Two inmarsat terminals at Killari and Latur. 12 channel. UHF Radio System between Killari-Nilanga.

Similar measures were taken by the department whenever natural calamities struck be it coastal Andhra, devastated by repeated cyclones or earth quakes in Assam in 1980 and Uttar Kashi in 1992.

Cyclone Warning Dissemination System. This was earlier known as Disaster Warning System. The Indian National Satellite System (INSAT) is a multi-purpose satellite system with its meteorological applications jointly operated by the Dept. of Telecom and the India Meteorological Department. The objective of this system is the
transmission of disaster warnings of the approaching cyclonic storm in the coastal areas. CWDS makes use of the direct-to-community broadcast capability of the INSAT satellites. The system enables the Cyclone Warning Centre (CWC) to directly and selectively address a particular area likely to be hit by a cyclone, and provide information around 24 hours in advance of the event.

Simple receivers, which are an adaption of direct satellite community TV receivers, are located in the coastal villages. These receivers are located in disaster-prone areas, which are divided into various zones. Receivers belonging to the same zone are given the same identification code. When the particular zone is addressed, the corresponding code is set, and is transmitted from the CWC. The signal reaches the Satellite Earth Stations (SES) via telephone lines using the line modem. This modulates the satellite carrier and is transmitted towards the satellite, multiplexed with TV, radio and other carriers. The signal is received back by all the CWDS receivers, and is decoded by the receiver matching the specific code transmitted. The siren in the receiver gets activated, for a minute, to attract the attention of the local people. It is followed by the voice message containing the cyclone warning information, in the local language. The receiver operates on mains power as well as on batteries.

The prototype system designed by Space Applications Centre (SAC), Ahmedabad, was initially implemented in Tamil Nadu and Andhra Pradesh in 1988. It was found effective, and has now been extended, to the western and eastern coasts, around Mumbai and Calcutta. In 1986 the name was changed from Disaster Warning System (DWS) to Cyclone Warning Dissemination System (CWDS). This is unique system, not tried before anywhere else in the world.
Man Is the Pivot

On the 31st March, 1939, the total number of persons employed by the P&T Department was 117,151. The figures included 21475 extra departmental agents who were not whole time Government servants and about 3,000 members of the Audit and Accounts staff. On 31st March, 1939, the number of all India unions or associations of employees of the Department recognised by the Government was eleven. The total membership of all the recognised unions was 41,859. At the end of 1939, 58 Cooperative Credit Societies with a membership of 66,043 and a subscribed capital of Rs.29,61,000 functioned in the Posts and Telegraphs Department.

The total strength of the staff of the department on 31st March 1947 was, permanent 131,634 and temporary 37,977, out of which 598 were permanent gazetted officers and 303 temporary gazetted officers. The total number of women employed in the Department on the same date was 693 permanent and 1,248 temporary, out of which two were gazetted officers. The unions, recognised by the Government, had now increased to 17.

Opening of cooperative credit societies, staff canteens, and night schools began to be encouraged around 1947. The number of cooperative credit societies rose to 50, with a membership of 74,554 and a subscribed capital of Rs.25,45,000.

Next three years showed further progress. The total strength of the staff of Department on 31st March, 1952 was, permanent 170,184 and temporary 49,526. The women employees on that date were 1,295 permanent and 2,633 temporary. The number of cooperative credit societies was 46 with a total membership of 107,330. The subscribed capital of these societies amounted to Rs.29,04,000.

The phenomenal growth of the department can be gauged from the fact that by 1997 the employee strength of DoT alone rose to 4.21 lakh. The number of women employees stood at 55240.
Training Centres

Special attention has always been paid by the Indian Telegraph Department to its staff. Dr. O'Shaughnessy, when he started the 'Electric Telegraphs' in 1853, had to start with absolute 'raw hands'. It had been possible, by giving them intensive training for six months, to make them thoroughly conversant with the art of telegraph signaling. Since then, elaborate training arrangements have been made for the telegraph signalers with one or more training class in every circle.⁴

The training of engineering personnel of the Indian Posts and Telegraphs Department had been for a long time the responsibility of the Electrical Engineer-in-Chief. The Training Centre was originally located in his office in Alipore Calcutta. In 1942, the training classes which were being conducted at Calcutta were shifted to Jabalpur and were placed as a separate unit with a Divisional Engineer, Telegraphs, in charge. The Administrative control was still with the Electrical Engineer-in-Chief. From 1st April, 1948 with the abolition of the post of Electrical Engineer in Chief, the Training Centre has been placed under the direct administrative control of the Posts and Telegraphs Directorate, New Delhi. Engineering maintenance staff require highly specialised training and for this reason they have always been centralised.

The Training Centre instructs only those Posts and Telegraphs employees who have already been recruited to the Department by competitive examinations.

Presently the Department has 42 Telecom Training Centres comprising two Apex Level Training Centre namely Advanced Level Telecommunication Training Centre (ALTTC) Ghaziabad and Bharat Ratna Bhimrao Ambedkar Institute of Telecom Training (BRBRAITT) Jabalpur for training of Telecom professionals and Engineers, 13 Regional Telecom Training Centres located at different regions in the country to provide training to supervisory staff of the Department and 27 Circle and District level Telecom Training Centres to cater to the training needs of field personnel. Two more Regional
Telecom Training Centres at Bhubaneshwar and Guwahati are in the process of being set up.

In addition to above and with a view to provide training to staff of restructured cadres numbering 1.96 lakhs, 122 temporary branch training centres have been opened in various circles so that the drive launched by DoT to train the eligible personnel of the cadre by March, 1998 can be met. To meet the challenge of fast obsolescence in the Telecom technologies, the training equipment and the training courses are upgraded continuously to meet the overall objectives of training.  

A total of 121644 persons were trained in various centres during the year 1996-97. This include 146 foreigners trained in ALTTC, Ghaziabad and BRBRAITT, Jabalpur.

The Department deputed 169 offices during 1996-97 for training abroad in modern switching, transmission technologies and management. 101 Officers of the Department were deputed for seminars and courses conducted by other departments and outside agencies during 1996-97.

Training of restructured Cadres of Phone Mechanic, Telecom Technical Assistant and Senior Telecom Operating Assistants are in progress. A total number of 84070 Phone Mechanics, 19030 TTAs and 77925 Sr. TOAs have been trained till December 1997.

**Beyond The Century**

*A Customer is the most important visitor on our premises.*

*He is not dependent on us.*

*We are dependent on him.*

*He is not an interruption on our work.*

*He is the purpose of it.*
He is not an outsider on our business. 
He is a part of it.
We are not doing him a favour by serving him.
He is doing us a favour by giving us an opportunity to do so.
--Mahatma Gandhi, *(quoted in P & T Consumer Service Brochure, 1972)*

Consumer is the king in a free market economy, they say. The forces of production, service and regulation are subservient to the whims of the consumer. This is the new paradigm.

In this context as one surveys the emerging telecom scene beyond the century Mahatma Gandhi’s words uttered half a century ago sound more relevant and real.

The resolution behind the new thrust of the DoT, the plans to redesign refashion and deregulate its activities, the corporatisation of public sector utilities are all designed to redeem Mahatma Gandhi’s dream. The greatest proponent of swadeshi had made two rare exceptions. With his insistence on punctuality the Mahatma had allowed for himself the use of a watch and a telephone.

Time was precious for him. It was the greatest treasure that he devoured. “I have become Time” declared Sri Krishna, at the flag end of his teaching of the Gita. Time is the greatest of all destroyers, harbinger of change, and the usherer of novel and new.

DoT is changing with times. This change is what makes it the most vibrant of all public services. “One of the most fateful errors of our age is the belief that the problem of production has been solved. The illusion of unlimited powers nourished by astonishing scientific and technological achievements had produced the concurrent illusion of having solved the problem of production” says E F Schumacher, in his book *Small is Beautiful.*
The telecommunications in India still has a long way to go, when one compares it with the giant leap the world has taken. A march from a 1.6 per cent teledensity to a respectable 10 per cent is a gigantic task.

Fun and fundamental change will mark the new millennium into which we will awake 23 months hence - a world where traditional concepts will make a quick retreat.

One of the most important documents to be published in Indian telecom in recent years, the Task Force Report on Telecom sets the scene for the next 20 years. The task force had a panel of telecom and IT experts and industry representatives in it. The result of two years of labour, the Task Force Report forecasts great potential for Multi-media services in the country and multi-level services to cater to different sections of population.

The Media coverage of the 1990 Gulf war demonstrated the contribution of telecommunications technologies to news and information delivery. A sound telecommunications infrastructure is crucial for India. Telecommunication technologies today can rapidly alter the costs and efficiencies involved in the provision of products and services to people. Thanks to synergy of telecommunications and computing, distance and time are no longer barriers to delivering information, completing a task or providing a service.

A Vision for India’s Telecom Infrastructure

Given India’s capabilities, human and material resources and developmental priorities, the Task Force felt it necessary that India’s goal should be to provide to anyone, on demand and at an affordable price an international range and quality of services. This is much the same as expressed in the National Telecom Policy enunciated in May 1994. The task force believed this goal to be realizable and practicable. Existing demand for plain telephony was expected be met by the year 2000; the goal of making an
international range and quality of other services could be realized only if a combination of processes was set in motion in right earnest. The Task Force candidly emphasised that there was need to initiate significant action now to evolve: a coherent regulatory mechanism for telecommunications, a conducive structure for a viable and competitive telecom industry, an investment-friendly environment, an environment to support technological innovation and the provision of new services, an effective strategy for HRD and a targeted approach to R&D based on development priorities and national strengths. While a major initiative in realizing the 2015 vision for telecommunications will have to come from government, it was clear that industry, regulators, R&D institutions, and users themselves, have a crucial role to play.°

The Task Force has covered various aspects of telecommunications development such as Network, Access Network, Customer Premises Equipment, Switching, Transport Network, Network Management Systems, Services, Applications, Research and Development and Socio-Economic Benefits.

The Perspective Plan of the Department of Telecommunications (1997-2007) is blueprint for activities related to growth of telecommunications in the country is the next decade. This was conceived for phasing the growth of the network in a manner which meets the demand for telecommunication services in its quality, quantity and variety. It was to establish necessary, production facilities and Planning the necessary resources.

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