

**COMPETITION POLICY IN TELECOMMUNICATIONS:**

**THE CASE OF INDIA**

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**INTERNATIONAL TELECOMMUNICATION UNION**

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## **1 Introduction**

Over the last decade and a half the Indian telecommunication sector has been moving from a government monopoly to a competitive environment. This case study describes the main elements of the progress towards competition and issues that need to be resolved to strengthen the competitive process.

The case study is organized as follows: Section 2 briefly presents the country and sector background and Section 3 outlines the legal, regulatory and policy framework for the telecommunications sector in India. The process of restructuring the government monopoly operator, the structure for the introduction of private operators, and the license conditions and their implications for competition are described in Section 4. This is followed by Section 5 which presents the emerging competitive profile of the telecom sector. Section 6 describes the tariff regulation and the impact of competition on cross-subsidies. Section 7 discusses the interconnection regulation, especially the resolution of interconnection disputes between the incumbent and new entrants and Section 8 the issues related to the current process for spectrum assignment and pricing. Section 9 discusses the “Wireless in Local Loop with Limited Mobility” dispute which is currently pending with the Supreme Court of India, after having exhausted all other attempts at resolution, while Section 10 provides an assessment of the factors inhibiting competition in the telecom sector and the steps necessary for enhancing competition. The document ends with conclusions in Section 11.

## **2 Country and sector background**

India had a real GNP on purchasing power parity basis of approximately US\$2.4 trillion for 2000, making it the fourth largest economy in the world, after the United States of America, China and Japan, as per the World Development Report for 2000-2001. India had a population of approximately one billion in April 2001 and is the world's second most populous country after China. It is also the world's largest democracy. Table 2.1 provides certain key indicators of the Indian economy. Appendix 1 provides a more detailed set of indicators.

**Table 2.1: Economic Indicators for India**

<b>As of and for the year ended March 31</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
GDP per capita (in Rs.)*** <sup>1</sup>		18,078	19,748	21,648
<b>Growth rate (%)</b>				
Real GDP growth*	4.80	6.60	6.40	6.00
Agricultural production	-6.20	8.20	-1.50	-4.60
Industrial production**	6.60	4.10	6.60	5.10
Wholesale Price Index (average)**	4.40	5.90	3.30	7.10
<b>Foreign Trade</b>				
Imports (% to GDP)**	10.20	10.10	10.40	10.70
Exports (% to GDP)**	8.60	7.90	8.30	9.20
Foreign Exchange Assets (in US\$ billions)**	26	29.5	35.1	39.5

*Sources:* \*Economic Survey, conducted by the Government of India annually. Data for 2001 is as per advance estimates, as provided in the Economic Survey; \*\*Data released by Centre for Monitoring Indian Economy (CMIE); \*\*\*Based on the data released by CMIE.

Since 1990, successive governments have laid emphasis on economic reforms resulting in reduced government control and liberalization of economic policies. Table 2.2 provides figures for inflows into India of foreign direct investment and portfolio investment.

**Table 2.2: Inflows into India of foreign direct investment and portfolio investment**

<b>Year ended March 31 (in USD millions)</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Foreign direct investment	2,144	2,841	3,562	2,480	2,167	2,342
Portfolio investment.	2,661	3,312	1,828	(68)	3,024	1,083

*Source*

ata released by CMIE

The fixed-line telephone penetration rate stood at only 3.2% as of September 2001 and the cellular penetration rate was 0.5%. The teledensity for rural areas is only 0.4%. There is a concerted attempt to raise the level of teledensity in rural areas. There has been significant growth in the number of fixed-line and cellular subscribers in the last five years, see Table 2.3.

<sup>1</sup> The average rate per US \$ was Rs 36.31 in 1997, Rs 41.26 in 1998 and Rs 43.06 in 1999, Rs 44.94 in 2000 and Rs 47.91 in 2001. Rate on November 12, 2002 per US\$ was Rs 48.40 (Data from the IMF)

**Table 2.3: Growth in the number of fixed-line and cellular subscribers**

<b>As of March 31</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>1997 to 2001 CAGR (%)</b>
Cellular Subscribers (thousands) (1)	339	882	1,200	1,884	3,557	80.0
Fixed-line Subscribers (thousands) (2)	14,543	17,802	21,594	26,511	32,436	22.2

*Source:* (1) Data released by COAI; (2) Based on BSNL annual reports

The tentative figures for March 2002 are 6.43 million cellular subscribers and 38.6 million fixed-line subscribers. Therefore, the number of cellular subscribers has kept up with the historical 80% cumulative annual growth rate and the fixed-line growth rate was a little below 20%.

The country's Internet user base increased 27 per cent to 7 million during the calendar year 2001, as against 5.5 million in 2000, according to a global Internet usage survey by the International Telecommunication Union. The ITU survey also reveals that while India's net user base represents 68 Internet users per 10,000 inhabitants, China, on the other hand, had 260 users per 10,000, while Japan had 4,547 users per 10,000 inhabitants.

The growth in usage in India has in part been spurred by the deployment of more Internet hosts. The total number of hosts in the country grew 132 per cent to 82,979 during 2001, compared with 35,810 in 2000. The total number of personal computers deployed between January and December 2001 was 6 million according to the survey. The total number of PCs deployed in China was 25 million. The number of PCs deployed per 10,000 inhabitants was 0.58 in India and 1.93 in China. China and India are, however, almost evenly matched as far as the number of Internet hosts go, with the number for China at 89,357 in 2001, which is only 6,378 more hosts than India.

Software and related services have been among India's fastest growing export items according to the World Investment Report, 2002, released by the United Nations Conference on Trade and Development. India's software and related services exports averaged 40 per cent growth per annum in 1988-2002 and expanded from \$70 million in 1988 to a projected \$7.6 billion in 2001-02. This industry accounted for 16 per cent of the country's total exports in 2000-01, employed 5 million people and received \$1.6 billion in investments. However, the software exports of India are highly concentrated in a few large firms. Of the country's 30,000 software firms, just 20 accounted for 28 per cent of the industry's exports. The export propensity of these top firms was higher than 92 per cent and most of the leading software producing and exporting firms were Indian-owned.

Foreign companies played an important role in the industry, with foreign affiliates accounting for some 19 per cent of India's software exports in 1998-99. Almost all major US and European technology firms are present in India despite a limited domestic software market. However, the foreign companies cluster their high-technology activities largely into a single location, Bangalore, because of the limited services elsewhere.

### **3 Policy and regulatory framework**

The current policy and regulatory framework is guided by the New Telecommunications Policy 1999 and the Telecom Regulatory Authority of India Act 1997. These are proposed to be replaced by a Communication Convergence Bill to accommodate the increasing convergence in communications.

#### **3.1 New Telecommunications Policy 1999**

In 1994, the Government announced the National Telecom Policy which defined certain important objectives, including the availability of telephone on demand, the provision of world-class services at reasonable prices, ensuring India's emergence as major manufacturing/export base of telecom equipment and

universal availability of basic telecom services to all villages. It also announced a series of specific targets to be achieved by 1997.

NTP 1994 also recognized that the required resources for achieving these targets would not be available only out of Government sources and concluded that private investment and involvement of the private sector was required to bridge the resource gap. The Government invited private sector participation in a phased manner from the early nineties, initially for value added services such as Paging Services and Cellular Mobile Telephone Services (CMTS) and thereafter for Fixed Telephone Services (FTS).

However, the results of the privatization were not entirely satisfactory. The private sector entry has been slower than what was envisaged in the New Telecommunications Policy (NTP) 1994. The main reason, according to the cellular and basic operators, was the fact that the actual revenues realized by these projects fell far short of the projections and the operators were unable to arrange financing for their projects. As a result, some of the targets, as envisaged in the objectives of the NTP 1994, remained unfulfilled.

The government viewed these developments with concern as it would adversely affect the further development of the sector and recognized the need to take a fresh look at the policy framework for this sector. This resulted in the New Telecommunications Policy 1999.

The New Telecommunications Policy (NTP) 1999 is currently the most important policy document shaping the developments of the telecommunications sector. The objectives of the NTP 1999 are:

- Availability of affordable and effective communications for the citizens is at the core of the vision and goal of the telecom policy.
- 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;
- *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;*
- 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;

In line with the above objectives, the specific targets that the NTP 1999 seeks to achieve are:

- Make available telephone 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;
- Encourage development of telecom in rural areas making it more affordable by suitable tariff structure and making rural communication mandatory for all fixed service providers. Increase rural teledensity from the current level of 0.4 to 4 by the year 2010 and provide reliable transmission media in all rural areas;
- Provide Internet access to all district headquarters by the year 2000;
- Provide high-speed data and multimedia capability using technologies including ISDN to all towns with a population greater than 200,000 by the year 2002.

NTP 1999 also represents the first policy document to recognize the importance of convergence for development of the telecom sector in India. According to the document

“Convergence of both markets and technologies is a reality that is forcing realignment of the industry. ... As in the case of most countries, separate licenses have been issued in our country for basic, cellular, ISP, satellite and cable TV operators each with separate industry structure, terms of entry and varying requirement to create infrastructure. However, this convergence now allows operators to use their facilities to deliver some services reserved for other operators, necessitating a relook into the existing policy framework.”

However, this recognition has not been translated into policy formulation and the NTP 99 continues to look at the sector through a ‘non-convergent’ lens. This is reflected in the classification of services along traditional lines.

### 3.2 Telecom Regulatory Authority of India (TRAI) Act

The Telecommunications Regulatory Authority of India (TRAI) was established in January 1997 under the TRAI Act as an autonomous body with quasi-judicial powers to regulate telecommunications services in India. The TRAI Act was amended in 2000, following which TRAI's powers to adjudicate disputes have been vested in the Telecom Disputes Settlement and Appellate Tribunal (TDSAT).

The regulatory functions of TRAI fall within two broad categories - recommendatory and mandatory. The principal recommendatory functions of TRAI may be exercised either on its own initiative or on request from the licensor. This function mainly covers introduction of new service providers, terms and conditions of licenses to be awarded to service providers, and revocation of licenses. The recommendatory function also covers, "measures to facilitate competition and promote efficiency in the operation of telecommunication services so as to facilitate growth in such services."

The amendment of the TRAI Act in 2000 clarified and strengthened the recommendatory powers of the TRAI, especially with respect to the need and timing for introduction of new service provider, and terms and condition of license to a service provider. The TRAI recommendations continued to be non-binding on the government but the amendment formalized the recommendatory function of the TRAI. While in general the TRAI could provide its recommendations, either *suo moto* or on a request from the government, in the case of these two issues the government was required to seek the recommendation of TRAI. The government was also required to provide any information requested by the TRAI to enable it to make its recommendation. In a case where the government concluded that the TRAI's recommendations could not be accepted, or needed modifications, it would have to refer the recommendation back to the TRAI. After this the government would take a final decision.

In making its recommendations the TRAI has followed a public consultation process, which has enabled various stakeholders to put forth their views. This has made the process of determining entry conditions transparent and has generally lead to better outcomes than before.

The principal mandatory functions of TRAI include fixing tariffs; ensuring compliance with the terms and conditions of licenses; fixing the terms and conditions of interconnection arrangements between service providers; and establishing and ensuring standards of quality of service to be provided by service providers.

TDSAT has been granted powers to adjudicate any dispute between a licensor and a licensee, between two or more service providers, and between a service provider and a group of consumers. However, the adjudication powers specifically exclude, "the monopolistic trade practice, restrictive trade practice and unfair trade practice which are subject to jurisdiction of the Monopolies and Restrictive Trade Commission established under sub-section (1) of section 5 of the Monopolies and Restrictive Trade Practices Act, 1969." TDSAT also has the jurisdiction to hear and dispose off appeals against any direction, decision or order of TRAI. Decisions of TDSAT can be appealed only in the Supreme Court of India.

### 3.3 Communications Convergence Bill 2000

A Draft Communications Convergence Bill 2000, or Convergence Bill, has been tabled in Parliament. It is expected that the Convergence Bill will be discussed at various chambers and in Parliament before it is put to vote. If passed, the Convergence Bill will repeal a number of existing legislation relating to the telecommunications industry, including the Indian Telegraph Act of 1885, the Telegraph Wire Unlawful Possession Act, 1850, the Cable Television Networks (Regulation) Act, 1995 and the TRAI Act.

The Convergence Bill proposes significant changes in the organization, functions and structure of the regulatory bodies functioning in the telecommunications industry in India. The Convergence Bill seeks to establish the Communication Commission of India, or CCI. The CCI will facilitate and regulate all matters relating to carriage and content of communications. In effect the Communications Commissions will take over the functions of the TRAI. Significantly it will also issue licenses and allocate spectrum, two important functions not under the purview of the current TRAI, and also regulate content, an activity so far dealt with by the normal legal processes.

The Communications Commission of India, while exercising its functions, will be guided, among others, by the following principles:

- (i) that the communication sector is developed in a competitive environment and in consumer interest;

- (ii) that communication services are made available at affordable cost to all, especially uncovered areas including the rural, remote, hilly and tribal areas;
- (iii) that a modern and effective communication infrastructure is established taking into account the convergence of information technology, media, telecom and consumer electronics;
- (iv) that equitable, non-discriminatory interconnection across various networks are promoted;
- (v) that licensing and registration criteria are transparent and made known to the public;
- (vi) that an open licensing policy allowing any number of new entrants (except in specific cases constrained by limited resources such as the spectrum) is promoted; and
- (vii) that the principle of a level playing field for all operators, including existing operators on the date of commencement of the Act, is promoted so as to serve consumer interest.

The Convergence Bill provides a new set of 'convergent' license categories for services:

- (a) providing or owning network infrastructure facilities: this includes earth station, cable infrastructure, wireless equipments, towers, posts, ducts and pits used in conjunction with other communication infrastructure, and distribution facilities including facilities for broadcasting distribution;
- (b) providing networking services: this includes band-width services, fixed links and mobile links;
- (c) providing application services: this includes public switched telephony, public cellular telephony, global mobile personal communication by satellite, internet protocol telephony, radio paging services, public mobile radio trunking services, public switched data services and broadcasting (radio or television service excluding continued);
- (d) providing content application services: this includes satellite broadcasting, subscription broadcasting, terrestrial free to air television broadcasting and terrestrial radio broadcasting;
- (e) providing value added network application services such as Internet services and unified messaging services.

The Bill makes it clear that “*no license shall be granted under this sub-section if it conflicts with the objectives and guiding principles ... particularly in relation to ensuring fair access and promotion of competition.*”

### **3.4 Competition Bill, 2001**

The Competition Bill, 2001, at present pending in the Indian Parliament, seeks to repeal the Monopolies and Restrictive Trade Practices Act, 1969, which has become obsolete in view of developments in the Indian and global markets. It endeavors to shift the focus from restricting monopolies to promoting fair competition. It seeks to dissolve the Monopolies and Restrictive Trade Practices Commission and to transfer the cases pending before the MRTP Commission, other than those relating to unfair trade practices, to the Competition Commission of India (CCI), a quasi-judicial body, to be established under the Act. In recent years, the MRTP Commission has been quite inactive and has restricted itself to dealing with occasional complaints of 'unfair trade practices'.

As pointed out in the statement of objects and reasons of the Bill:

“In the pursuit of globalization, India has responded by opening up its economy, removing controls and resorting to liberalization. The natural corollary of this is that the Indian market should be geared to face competition from within the country and outside. The Monopolies and Restrictive Trade Practices Act, 1969 has become obsolete in certain respects in the light of international economic developments relating more particularly to competition laws and there is a need to shift our focus from curbing monopolies to promoting competition.”

The objectives of the Competition Bill are to promote and sustain competition in markets; to protect the interest of consumers; to ensure the freedom of trade; and to provide for the establishment of the CCI.

Clause 3 prohibits enterprises and persons from entering into agreements with respect to production, supply, distribution, storage, acquisition or control of goods, or provision of services, which may have an appreciable adverse effect on competition.

The Bill permits an enterprise to enjoy its dominant position, i.e., its position of strength in a relevant market within and outside India. Clause 4, however, prohibits any enterprise from abusing its dominant position.

Clause 5 deals with combinations of enterprises and persons. The acquisition of enterprises by persons, the acquiring of control by enterprises, and the merger or amalgamation of enterprises are considered combinations when their asset value and turnover cross certain threshold limits. Clause 6(1) declares that combinations having an adverse effect on competition are void. The Bill has specified high asset and turnover levels above which enterprises would fall within the realm of this provision.

Under Clause 19, the CCI has the authority to inquire into anti-competitive agreements, *suo moto*, on information or complaints received, or on a reference made by the Central Government, the State Government or statutory authorities. The relationship between the Commission and other statutory authorities, in general, and utility regulators, in particular, is specified in Clause 21 as follows:

"Where in the course of a proceeding before any statutory authority an issue is raised by any party that any decision which such statutory authority has taken or proposes to take, is or would be, contrary to any of the provisions of this Act, then such statutory authority shall make a reference in respect of such issue to the Commission. On receipt of a reference under sub-section, the Commission shall, after hearing the parties to the proceedings, give its opinion to such statutory authority which shall thereafter pass such order on the issues referred to in that sub-section as it deems fit. "

It is not clear from the Bill if any statutory authority can also on its own recommend to the Commission for the latter's opinion on any matter/practice in its sector, if it believes that there is a violation of the Competition Act, which it cannot investigate and judge on its own. The Bill also does not clarify the relative position of the Communication Commission and the sector regulator with respect to any competition issue for a given sector.

## 4 Sector Restructuring

The Indian telecom industry has evolved from a government monopoly to a reasonably competitive structure with significant private participation. This evolution was the result of series of incremental moves and not the result of some over-arching grand plan. There are two key elements in the transition of the telecommunications sector from a government monopoly to a competitive structure - the restructuring of the government operator and the entry of private operators.

### 4.1 Restructuring the government operator

Until the mid-1980s, the telecommunications industry in India was a monopoly, functioning as a department of the government. Faced with rapidly increasing demands for telecommunications services and equipment, the Government commenced a reorganization of the telecommunications industry. Mahanagar Telephones Nigam Limited (MTNL), a Government company, was established in 1986 to provide telephone and telex services under a non-exclusive license in the two largest metropolitan cities of Delhi and Mumbai. Videsh Sanchar Nigam Limited (VSNL) was also established in the same year to provide international telecommunications services. Department of Telecommunications (DoT) retained responsibility for providing all other telecommunications services throughout India. The Telecom Commission was established in 1989 as an executive body under the Ministry of Communications to formulate policy for approval of the Government and to implement the Government's policy in matters concerning telecommunications.

In October 1999, DoT was bifurcated into two departments: the Department of Telecommunications (DoT), as the licensor and policy maker, and the Department of Telecommunications Services (DTS), as the service provider. The DTS was corporatised in October 2000, as a new entity - Bharat Sanchar Nigam Limited, or BSNL, which provides telecommunications services in the entire country except in Delhi and Mumbai, where MTNL continues to be the Government controlled service provider. The government's stake in MTNL is currently at 56.25%. VSNL was privatized in February 2002 with the sale of a strategic stake of 25% to the Indian business house of Tatas, with the government retaining a 26.13% stake. This represents the first and only instance of the government transferring control of a telecom undertaking to the private sector.

The creation of MTNL for providing services in Delhi and Mumbai and of VSNL for providing international services was motivated mainly by the need to raise resources from the capital markets and reduce reliance on the government budget. There was little de facto autonomy, to these new organizations and they continued

to be controlled by the Department of Telecommunications. However, the significance of this step was that it formally broke up the Department of Telecommunication into three organizations. Such a break-up may have been difficult if attempted later on as a part of a larger exercise of liberalization and privatization. The subsequent restructuring was motivated by the entry of private operators and the continuing pressure to separate the policy making and licensing functions of the government from its role as an operator of telecom services.

#### 4.2 Structuring and award of licenses

As per the configuration of the Department of Telecom network, the entire country is demarcated into 21 basic telecom Circles for jurisdictional purposes. For the purpose of entry of private operators, each Circle has been taken to be, by and large, territorially congruous with the corresponding State. The metropolitan cities of Mumbai, Kolkatta and Chennai are included within the respective territorial Circles for basic service license, and independently as metros for cellular license. The National Capital Region of Delhi is treated as a separate Circle for fixed service license and as a metro for cellular license. The Circles are further categorized into approximately 322 Secondary Switching Areas (SSA) or Long Distance Charging Areas (LDCA), which are, by and large, co-terminus with revenue districts. LDCAs are further divided into around 2,550 Short Distance Charging Areas (SDCAs), which are co-terminus with taluks<sup>2</sup>. Each taluk may have local exchange in various towns/villages within the taluk. On 31 March 2001, BSNL had 31,589 telephone exchanges all over the country. These exchanges are connected to a Tandem Exchange at the taluk head quarters, which in-turn is connected to Level-2 Trunk Automatic Exchange (TAX) in the SSA. In each SSA there is at least one TAX.

While inviting bids, the DoT categorized the service areas into Categories A, B and C. This categorization was based largely on the expected revenue from these telecom circles. These categories are:

*Category A:* Tamil Nadu, Maharashtra (including Mumbai MTNL), Andhra Pradesh, Gujrat, Delhi (MTNL) and Karnataka circles.

*Category B:* Haryana, Kerala, MP, Punjab, Rajasthan, U.P. West, U.P. East and W.B. (Including Kolkatta District) circles.

*Category C:* Andaman & Nicobar Island., Assam, Bihar, H.P., J&K, N.E. and Orissa circles.

For cellular services there is a separate category of metros consisting of Delhi, Mumbai, Chennai and Kolkata.

India has five distinct categories of telecom licenses:

- basic: intra-circle wireline and 'wireless in local loop' with limited mobility (WLL).
- mobile: intra-circle cellular mobile. For mobile licences there are 22 circles. Two additional states, J&K and Andaman and Nicobar are listed only as wireline circles.
- national long distance: National Long Distance (NLD) for inter-circle carriage
- international: International Long Distance (ILD) for overseas connectivity.
- Internet service provision and internet telephony

The government initiated the process of the liberalization of the telecom sector in 1991, by inviting bids from private operators for two licenses to provide cellular services in each of the four metros. Subsequently, in 1994 bids were invited for one license for providing fixed-line services in 21 circles. In January 1995, bids were invited for two licenses to provide cellular services in each of the eighteen telecom circles excluding the four metros. While issuing the cellular licenses the DoT/MTNL retained the right to operate a cellular network in each of the license areas. The cellular roll-out was done in 1995 for the metros and between 1996 – 98 for the circles.

The initial procedure for the award of licenses proved almost fatal for the growth of the telecom sector. The government initially adopted the first price sealed bid auction for two cellular licenses and one basic license in each circle. While the scarcity of spectrum may have been a valid reason for auctioning a limited number

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<sup>2</sup> A district is sub-divided into taluks for revenue and administrative purposes.

of cellular licenses, the reason for auctioning basic service license was never clear. The only plausible reason appears to be revenue maximization through license fees for the government. Not surprisingly only six basic service licenses were issued and these too were not implemented with any seriousness. The growth of the cellular sector was also stymied by the high bids, as claimed by the cellular operators. It is noteworthy that the government recognized the problem and as a part of NTP 99 allowed the licensees to pay a percentage-revenue share instead of the remaining installments of the license fee bid by them.

In January 2001, the Government announced guidelines for the fourth cellular operator to provide cellular services in the country and the licenses were issued in September 2001 through a revised three-round open bidding system instead of the earlier sealed bid system. During this period, the Government also announced guidelines for opening up of the fixed-line services sector to multiple operators in each circle. In August 2001, the Government announced the opening up of the national long distance sector to multiple licensees. Finally, it also decided to open the International Long Distance Service without any restriction on the number of operators, from April 1, 2002. In all these cases there was obviously no bidding for the licenses.

### **4.3 License Conditions**

The license conditions define the rule of operations and have important implications for competition. The main license conditions relate to roll-out obligations, revenue share and universal service obligations.

#### **4.3.1 Service definitions**

Basic and cellular service providers are not allowed to interconnect directly across circles. The national long distance service provider will have a right to carry inter-circle calls. In addition, the Government has permitted the long distance service providers to carry intra-circle traffic only in conjunction with the service providers in the respective circles. It is mandatory for fixed, cellular and cable service providers to provide interconnection to national long distance service providers.

International Long Distance traffic should be routed through the network of NLD service providers, to the ILD service providers' gateways for onward transmission to international networks. However, the access provider can be allowed to interconnect with the ILD service provider directly in situations where ILD Gateway Switches, and that of Access Provider's (GMSC/Transit Switch) are located at the same station of Level -I TAX .

It is also mandatory for all NLD service providers and all ILD Service providers to provide interconnection to each other whereby the subscribers could have a free choice to make international long distance calls through any NLD/ILD service provider.

The Government has decided to permit the Internet Service Providers (ISPs) to process and carry voice signals with effect from 1 April 2002. Only ISP licensees are permitted, within their service area, to offer such a service. The scope of IP Telephony is limited to:

- a) PC to PC (Both within as well as outside India);
- b) PC to Telephone (PC in India to Telephone outside India);
- c) IP based H.323/SIP Terminals in India to similar Terminals both in India and abroad, employing IP addressing scheme of 'IANA'.

In January 2001, the Government approved TRAI's recommendation to permit basic service licensees to provide limited mobility services using Wireless in Local Loop (WLL), within the Short Distance Calling Area, or SDCA. COAI contested the decision of the Government before the TDSAT. The COAI's main objection was that the WLL business model is contingent upon an element of cross subsidy from corporate wireline services offered by the same operator. Further, in their opinion, the terms of entry for any 'mobility' service (whether GSM or WCLM) should be the same i.e. award of licenses (and allocation of spectrum) through a competitive bidding process. The TDSAT has upheld the government's decision and the COAI has now taken the matter to the Supreme Court.

### **4.3.2 Roll-out obligations**

Basic and long distance services licenses have certain roll-out obligations. The roll-out obligations are intended to prevent 'cherry picking' by new entrants to the competitive disadvantage of the incumbent BSNL/MTNL which has an implicit mandate for universal coverage.

#### *4.3.2.1 Basic*

The new licensees have to cover progressively 15%, 40%, 80% and 100% of the license area by establishing points of presence at the SDCAs, at the end of two, three, five and seven years, respectively, from the effective date of the license agreement.

#### *4.3.2.2 National Long Distance*

The NLD operators are required to cover progressively 15%, 40%, 80% and 100% of the license area by establishing points of presence at the LDCAs, at the end of two, three, four and seven years, respectively, from the effective date of the license agreement. The corresponding requirement for the coverage of uneconomic areas is 2%, 4%, 7% and 100%.

The roll-out obligation for the NLD operator effectively mandates a national NLD network and rules out the possibility of regional networks interconnecting with each other to create a national NLD network.

#### *4.3.2.3 International Long Distance Services*

International long distance operators are required to establish minimum four point of presence, one each in the eastern, western, northern and southern regions of the country. The operators should also facilitate delivery of traffic through at least four direct routes, which are North America, the Gulf region and Europe and also any one location in South East Asia, Far East or Oceania. It should also be ensured that traffic to remaining countries is transited through one of these hubs abroad. The network should allow traffic to terminate to any global destination.

### **4.3.3 License fee**

Both cellular and basic operators pay a license fee at 12% of adjusted gross revenues (AGR) in metropolitan areas and category A circles, 10% in category B circles and 8% in category C circles. In the case of cellular operators these rates will be payable unless existing or future fixed-line service providers are prohibited from providing limited mobility using WLL, in which event the license fees will be payable at a revised rate of 15% of AGR.

International and national long distance service providers are required to pay an annual license fee, including universal services obligation charges, at the rate of 15% of the adjusted gross revenue.

ISPs do not pay any license fee and this is also extended to their provision of Internet Telephony services.

The revenue shares are considered high by international standards and there have been demands by the private sector entrants to reduce the revenue share to a level adequate for meeting the USO and administrative costs.

### **4.3.4 Universal Service Obligations**

A portion of the license fee, equal to 5% of the Adjusted Gross Revenue will be used to create a Universal Service Fund. This will be used to fund public access telephones or Community telephones meant for public use and individual household telephones in net high-cost rural/remote areas. The support from Universal Service Fund will be provided to meet Net Cost (i.e. cost minus revenue) of providing the universal service.

The implementation of Universal Service Obligation will be through a multi-layered bidding process on the Least Quoted Subsidy support basis. The bids shall be called for separately, for each Service Area or part thereof. The lowest bid, offering the least subsidy shall be accepted subject to a ceiling of the benchmark cost as determined by DoT. For this purpose, the first round of bidding will be amongst the existing Access providers (BSOs and CMSPs) of the concerned service area. Where no bids are received from any of the BSOs/ CMSPs in the concerned service area, or the lowest bid is higher than the benchmark, then a fresh round of bidding shall be called for. This bid will be open to all the BSOs and CMSPs in the country, including the ones in the concerned service area as well as their franchisees.

The TRAI has recommended the creation of the office of the USF Administrator and an Independent US Fund Administration Board. TRAI would have representation on this Board, at the member(s) level. The selection of other members of the USF Administration Board would be made by the TRAI in consultation with the Government. The USF Administrator will also be the Chairperson of the Board and exercise administrative and such other powers as may be delegated to him by the Board. In effect the chairperson will perform the functions of the CEO in the Fund administration. The Fund Administration Board will be given the requisite autonomy & powers to create an organization equal to the task entrusted to it by the Authority.

While the government has nominated a USF administrator, it has yet to take a decision on the setting up of the Board. The fund is yet to start operations.

## **5 Competitive Profile of the Telecommunications Sector**

The cellular sector is reasonably competitive with three private operators providing service in almost all the circles and metros. While MTNL has started service in Mumbai and Delhi and BSNL in a few states their presence so far is marginal. On the other hand, in basic services, MTNL and BSNL continue to dominate with only marginal presence of private operators. In long distance BSNL is still the dominant operator, with Bharti having made an entry as the long distance carrier for calls from cellular. Bharti and others may be able to compete with BSNL for fixed-line traffic once carrier selection facilities have been put in place, as per the direction of the TRAI. In International Long Distance the new entrants are likely to provide significant competition to VSNL, which after privatization has to compete for BSNL and MTNL's international traffic.

### **5.1 Cellular**

It is important to note that cellular services were first introduced as “Value Added Services” to be provided mainly by private operators. It was probably not anticipated that cellular services would acquire a status comparable to wire-line services and in fact become a major competitor to wire-line services. The private sector has had a free-play in this sector with insignificant presence of the government operators. According to some observers the introduction of “limited mobility” for WLL may be an attempt by the government operators to capture some of the growing cellular market. It is the cellular sector, which has provided the important platform for the private operators to enter other services, such as national and international long distance.

Starting with a duopoly when the first 2 GSM licenses were awarded in 1994/96, India's mobile market is now evolving into a more competitive four-player market. In the terms of the old licensing scheme, eight licenses for the four metro cities of Delhi, Mumbai, Calcutta and Chennai were issued to 8 companies in November 1994. 34 licenses for 18 Territorial Telecom Circles were also issued to 14 companies during 1995 to 1998. MTNL and BSNL were issued licenses as a third operator in various parts of the country. In terms of NTP 1999, 17 fresh licenses have been issued to private companies as the fourth cellular operator in September/October, 2001, one each in 4 Metro cities and 13 Circles. An amount of Rs.16,330,000 was received as an up-front entry fee towards grant of these licenses.

The growth of cellular subscribers in the metros and the circles is shown in Table 5.1.

**Table 5.1: Growth in Cellular Subscribers**

<b>Number of Subscribers</b>	<b>Mar. 98</b>	<b>Mar. 99</b>	<b>Mar. 2000</b>	<b>Mar. 2001</b>	<b>Mar. 2002</b>
<b>Delhi</b>	215,144	215,637	332,330	556,671	1,067,676
<b>Mumbai</b>	243,028	228,297	319,309	518,538	974,081
<b>Chennai</b>	42,419	35,832	54,256	125,339	260,237
<b>Kolkata</b>	51,166	39,777	90,036	162,044	265,763
<b>All Metros</b>	551,757	519,543	795,931	1,362,592	2,567,757
<b>A' Circle</b>	176,954	354,799	585,653	1,165,778	2,134,333
<b>B' Circle</b>	138,309	288,321	460,094	932,685	1,501,151
<b>C' Circle</b>	15,296	36,915	42,633	116,040	227,573
<b>All India</b>	882,316	1,199,578	1,088,380	3,577,095	6,430,814

Source: ITU

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In the period since 1999, the cellular industry has witnessed changes in terms of both its size and competitive characteristics. From 1.14 million subscribers in 1999, the cellular industry now has almost 6.4 million subscribers. The changes have been a result of the diverse price and service options made available by service providers, decline in the costs of the network, the policy to allow entry of additional service providers in the market, and the availability of pre-paid options to subscribers. An insignificant proportion of the subscribers, (only about 2,200), were on the prevailing standard tariff package. As on March, 2002, out of a total of 6 million subscribers about 60% are prepaid and the balance of 40% is post-paid. However, the Average Revenue per User (ARPU) as of March 2002 was Rs.1,270 for post-paid as against only Rs.454 for pre-paid.

The cellular industry has seen significant consolidation over the past few years resulting in the emergence of up to three big players with a pan-India footprint. A profile of these players is given below:

- Bharti : Has SingTel and Warburg Pincus as strategic partners.
- Hutchison : Hutchison Whampoa is the biggest shareholder.
- Idea: Formed by the merger of Birla-AT&T and Tata. Negotiations underway for the merger of BPL.
- Escotel : Joint venture between Escorts group of India and First Pacific of Hong Kong.
- Reliance: Telecom venture of India's largest company viz. Reliance Industries. The Reliance group is also pursuing an all-India WLL strategy for which it has signed up for 17 wireline licences.

As of June 2002 five operators accounted for about 70% of the total subscribers of approximately 7 million. The shares of these five operators are given in Table 5.2. As shown in the table, the government owned operators, BSNL and MTNL, so far have extremely limited roll-out and subscriber base. BSNL launched its nationwide cellular network in October 2002.

**Table 5.2: Subscriber share of the operators**

Operator	Subscribers		Number of licenses	
	Number	Share	Operation	Pending
<b>Bharti</b>	1,606,702	22%	10	5
<b>Hutchison</b>	1,510,296	21%	4	3
<b>IDEA</b>	911,942	12%	4	1
<b>BPL</b>	976,851	13%	4	-
<b>Reliance</b>	414,175	6%	7	1
<b>BSNL</b>	26,127		2	All India
<b>MTNL</b>	201,174		2	-

Source: ITU

## 5.2 Basic services

Competition in the wireline segment has been slow since NTP 1994 and subsequently under NTP 1999. Most of the licenses awarded in 1994-95 under the auction process (limited to one license per circle in addition to the state-owned incumbent) were not implemented as bidders realized, in retrospect, that their high fixed-license fee bids had rendered projects unviable. Following the migration to revenue share regime (the fixed-license fee had to be paid until August 1999), competitive wireline services have been rolled out in six circles viz. Maharashtra (including Mumbai), Andhra Pradesh, Madhya Pradesh, Rajasthan, Gujarat & Punjab.

NTP 1999 completely de-licensed the wireline segment and also permitted wireline licensees to offer WLL with Limited Mobility services. Despite considerable initial interest, with 162 applications for wireline licenses, until December 2001, agreements had been signed only for 31 licenses, including the earlier six licenses. The number of subscribers served by the private Basic Service operators has increased from 272,761 as on April 1, 2001 to 447,618 on December 31, 2001.

## 5.3 Brief profiles of key competitors in wireline:

- **BSNL / MTNL:** These are the state-owned incumbents. While MTNL services Delhi & Mumbai metros, BSNL operates services in the rest of India. As of March 2001, BSNL had 29 million subscribers and MTNL 4.4 million in Delhi & Mumbai.
- **Tata Teleservices + Hughes Tele.com:** Following the recent merger of these entities, they are currently the largest basic services operator with 175,000 subscribers across two circles – Maharashtra (including Mumbai) & Andhra Pradesh. The Tata group has received Letter of Intent for 15 wireline licences but selected four circles (Delhi, TN, Karnataka & Gujarat) for implementation in the first phase.
- **Reliance:** Has plans to offer wireline services all-India in 17 circles. It currently offers services in parts of Gujarat with about 5,000 connections in operation. Apart from the focus on corporate clientele & data services, Reliance is the only basic services operator with plans for extensive WLL roll-out.
- **Bharti:** Current operations in Madhya Pradesh has 128,000 subscribers. It plans to offer wireline services in four more circles viz. Delhi, Haryana, Karnataka & Tamil Nadu.
- **Shyam Telecom:** Provides both wireline & GSM services in Rajasthan circle. Its current wireline subscriber base is estimated at 15,000.
- **Himachal Futuristic:** Has rolled out services in Punjab circle with an estimated 15,000 subscribers at present.

## 5.4 Long Distance

After the NLDO licensing guidelines were issued in 2000, several players have announced plans to enter this market to compete with monopoly incumbent BSNL. The profiles of these players are as follows:

- BSNL: The monopoly incumbent. Has the advantage of starting with a captive subscriber base of 26 million. Its cross-country network comprises 171,300 km of OFC, 31,000 km of coaxial cable, 106,500 km of microwave transmission and 62,700 km of UHF transmission.
- VSNL: the state-owned monopoly international carrier, now controlled by the Tatas. Has a limited cross-country backbone for switching inbound & outbound international traffic, comprising of leased bandwidth on fibre and satellite. VSNL received a NLD license as a part of the compensation for early termination of ILD monopoly.
- Reliance: Is laying India's largest OFC network covering 60,000 km. About 18,000 km has already been dug and ducted and fibre is currently being blown.
- Bharti: Plans to lay an OFC network covering 25,000 km of which about 9,000 km is already completed. Bharti is in the process of constructing a submarine cable landing station at Chennai.
- MTNL: Has announced intent to start NLD operations in a JV with other state-owned telcos/right-of-way bandwidth owners. However, these are yet to crystallise.

In addition, there are a few other players who intend to operate as bandwidth providers by exploiting their natural right of way. These include the PowerGrid Corporation Ltd (4,000 km of OFC in place and additional 10,000km being laid), Gas Authority of India Ltd (600 km in place to be expanded to 3,000 km) and Indian Railways (2,700 km existing network to be expanded to 21,000 km).

So far Bharti is the only private operator to have launched its services. Bharti commenced offering national long distance services by offering data transmission services in certain regions of India in December 2001. Voice transmission services for cellular to cellular calls in select cities were launched on January 26, 2002. Of the seven players that received ILD licenses, two -- Bharti Telesonic, a unit of Bharti Televentures, and Data Access, a unit of Hong Kong's Pacific Century Cyberworks -- have emerged as major competitors to VSNL, the incumbent monopoly operator. The entry of Bharti has been accompanied by sharp drops in national and international long distance tariffs. It cut tariffs by about 40% for calls to US and by 23% for calls to Europe. These rates have been matched by VSNL.

In a recent development, BSNL signed a MoU for revenue sharing with both the private operators. According to the terms of the understanding, for incoming calls, both the private operators will have to pay Rs.4.40 per minute for carrying calls within a radius of 50 km on its network. For 50-200 km and 200-500 km, they will have to pay Rs.6.40 and Rs.8.80 per minute respectively. Beyond 500 km, they will pay Rs.13 per minutes. For outgoing calls, BSNL will pay the two operators differently. It will pay a flat rate of Rs.11.75 per minute to Bharti for all countries. Data Access will get Rs. 6 per minute for calls to the US, Canada and Europe, Rs. 14 for calls to the Middle East and Rs.9 to other countries.

This has lead the incumbent operators BSNL and MTNL to demand similar revenue sharing terms with VSNL. According to VSNL's privatization terms, it will remain the preferred carrier for BSNL and MTNL for the next two years, provided it matches the tariffs of the other private ILD players. If VSNL revises its revenue-sharing arrangement, all the outgoing traffic will be routed through it. If it does not BSNL can explore other options. However, VSNL is reluctant to revise its revenue sharing arrangement. VSNL has pleaded their inability to match the rates saying that they would incur a loss of Rs 4-5 per call if they were to peg the rates to the level of other license holders. In a related development Bharti itself has moved the TRAI to protest against the rates that it had to quote after BSNL "persuasion". The petition filed by Bharti before TRAI states that the rate is neither in the interest of the sector nor the company. They also feel that fixing of rates falls under the jurisdiction of TRAI and should be left for the regulator to decide. They point out that what should be the market rate has not been defined as yet, and therefore it is unreasonable to require anybody to match it.

## 5.5 TRAI's assessment of competition in wireline services

In the case of basic services, the TRAI's recent consultation paper on 'Tariffs for Basic Services' notes that the share of BSNL and MTNL in basic services continues to be over 98% of the total market. Six private

basic operators have started commercial services with the first operator starting services only four years ago. According to the TRAI, "Four years is too small a time to make any serious dent in the market monopolized by a Government-owned operator who for several decades has dominated the markets." Moreover, "the projections available from the new entrants (i.e. the private sector operators) indicate that BSNL and MTNL will remain the dominant operators in terms of market-share in the near future and will continue to be so for some time to come." However, the TRAI points out that this conclusion is based only on the market-shares of Basic Services Operators (BSOs) and ignores possible competition from the other access providers i.e. cellular operators. "To the extent that these two access services are substitutable, an expansion of the definition of the market to include both basic and cellular services could provide insights into nature and extent of competition that are different from those that can be had by treating the two i.e. basic and cellular markets, as independent."

With respect to the long distance market, both NLD and ILD, the TRAI's view is that it "is likely to evolve towards a multipolistic market structure sooner than later." According to the TRAI "in this change, cellular mobile services and their fast growth will have an important role as this will affect competition in the telecom market." However, at present since the private NLD operator has established POPs in only 18 LDCAs out of 321 and is in a position to pick up traffic from less than 10% of the SDCAs, "*the incumbent will continue to dictate NLD tariff for quite some time*". The TRAI perceives the competitive trends more pronounced in the ILD sector, with the entry of two new operators. In addition, IP telephony is expected to exert competitive pressures in this segment.

Overall, the TRAI concludes that "while the market for access is heavily skewed towards the incumbent and is likely to remain so in the near and mid-term, the trends are different in both the NLD and ILD segments. In these segments competition would be more vibrant, and this would need to be factored in for regulatory policy formulations."

## 5.6 Internet service

The state-owned Videsh Sanchar Nigam Limited (VSNL) launched Internet Services in India in August 1995. For the first four years, VSNL was the sole provider of Internet services in the country. In November 1998, the Government ended VSNL's monopoly and allowed provisioning of Internet services by private operators. The terms and conditions of the ISP's license were unusually liberal with no license fee and an unlimited number of players. ISPs can also set their own tariffs. Over the last three years, the DoT has issued licenses to over 500 potential Internet service providers. About 140 of these licensees have started their operations covering about 300 cities and towns.

During the first three years of VSNL monopoly, the Internet subscriber base grew very slowly. By the end of March 1998, it had barely reached 140,000 subscribers. With the entry of private players and decline in access charges there was significant surge in the subscriber base. Between March '99 and March '01, the subscriber base grew more than 200 percent per year, from 280,000 to 3,000,000. However, from April 2001 onwards, the growth rate started declining on all India basis and as of March 2002 the subscriber base was about 4.1 million.

The entry policy and current status of each of these services is summarized in the Table 5.3. These policies go well beyond the commitments made at the WTO. In addition, the foreign equity is limited to 49% as against the WTO commitment of 25%. With the opening of the ILD sector the MFN exemptions for bilateral agreements between the VSNL/government of India and foreign operators and foreign governments for settlement rates cease to be relevant.

**Table 5.3: Summary of Competitive Position**

Service	Entry policy	Players in operation
<b>Basic</b>	No cap on number of licenses. Separate license for each circle.	BSNL in all circles except Delhi & Mumbai held by MTNL. Private operators functioning in Mumbai, Andhra Pradesh, Gujarat, Madhya Pradesh, Punjab & Rajasthan. Until December 2001, 25 new basic services licenses signed.
<b>Mobile</b>	Present cap of 4 operators per circle and metro. 3 private and BSNL/MTNL	2 to 3 private operators in each circle. MTNL in Mumbai and Delhi. BSNL in one metro and 2 States.
<b>NLD</b>	No cap on number of licenses. Only all-India licenses will be granted.	Presently a monopoly of BSNL. Recent entry of Bharti.
<b>ILD</b>	No cap on number of licenses.	A monopoly of VSNL until April 2002. Tatas acquired controlling stake in VSNL. Recent entry of Bharti.

Source: ITU

## 6 Tariff Regulation

In the case of cellular services, competition has been adequate to keep pressure on tariffs and TRAI intervention has been minimal. Perhaps once the sector has stabilized there may be a greater role for the regulator in curbing monopolistic tendencies. In the case of basic and long distance services the TRAI's programme has been to reduce cross subsidies. The TRAI's first tariff order initiated the process by reducing long distance rates. However, subsequent planned reductions were taken over by the entry of competitors in both international and domestic long distance.

The TRAI has been reluctant to push for increases in rentals given the resistance of the government operator to implement some of the rental increases allowed by TRAI. However, the government operator may not be able to sustain this for long without impairing its viability, especially if there are further reductions in long distance rates.

### 6.1 Basic and long distance services

The TRAI issued its first tariff order for basic and long distance services in 1999. The Telecommunication Tariff Order, 1999 ("TTO '99") provided for a 30 per cent increase in basic telephone rentals in urban areas, a 45% reduction in domestic long-distance charges and a 50% reduction in international long distance charges. The change in long distance call charge and rentals was considered too steep to be implemented in one step and, therefore, a three-stage phase-in was specified. The first two phases together would achieve a reduction in STD tariff of almost 85 per cent of the total reduction that had been envisaged in the TTO '99. The first phase was implemented in May 1999 and the second phase was scheduled to be implemented effective April 2000.

TTO '99 specified a standard tariff package, and allowed service providers to give alternative tariff packages together with the standard tariff package. The incumbent government operators, DTS and MTNL, provided an alternative tariff package, under which rentals were not changed for rural subscribers, or for urban subscribers making up to 200 metered call units (MCUs) per month. In addition, there was no reduction in the number of free calls that were provided in urban and rural areas. While this policy improved affordability of the tariffs for low callers, it also resulted in lower revenues than could have been earned if the standard tariff package were to be implemented.

As the end of the first phase was approaching, the incumbent government operators complained that, as a result of the tariff changes, their revenues were adversely affected and requested the TRAI to reconsider the planned tariff changes. At the end of a review the TRAI did not agree with the operators. The second phase of tariff change also included an increase in rentals for general user subscribers, i.e. subscribers making more than 500 metered call units per month of the billing cycle. The TRAI decided not to increase these rentals, because, "the Authority considers it important to achieve a good balance between cost and affordability".

The private operator, Bharti, commenced offering national long distance services by offering data transmission services in certain regions of India in December 2001. Voice transmission services for cellular to cellular calls in select cities were launched from January 26, 2002. Bharti entered into arrangements with some of India's private cellular operators which provided for reduction in long distance calling charges for calls between cellular subscribers by approximately 50% of then prevailing rates. Subsequently, BSNL announced a reduction in its long distance charges by approximately 62%, applicable to all long distance, fixed-line and cellular calls carried on BSNL's network. Bharti matched this reduction.

In March 2002, the TRAI issued the telecommunication tariff (twentieth) amendment order. The Order noted that with the entry of the first new NLD operator in the long distance market there has been a sharp reduction in the STD tariffs in the country. These new tariffs for STD were considerably less than the STD tariffs which were envisaged for the third tranche in TTO, 1999. Therefore, the TRAI decided that the third tranche of STD tariffs for DLD would be notified as ceilings.

Similarly, with the opening up of the ILD sector to competition from April 2002, the TRAI also expected ISD tariffs to decline, especially with the introduction of VOIP services. In this case also, the Authority decided to notify the third tranche ISD tariffs as ceilings. Subsequently Bharti entered with significantly lower tariffs. It cut tariffs by about 40% for calls to the US and by 23% for calls to Europe. These rates have been matched by VSNL.

## 6.2 Cellular

TRAI has stipulated maximum tariffs that may be charged by cellular operators. While it is mandatory for service providers to offer the standard tariff package prescribed by the TRAI to their subscribers, the service providers have the flexibility to offer other tariff schemes. The standard tariff package provided for a rental of Rs.475 per month for metros and Rs.500 per month for circles and per minute airtime charges (both incoming and outgoing) of Rs.4 for metros and Rs.4.50 for circles.

The recent TRAI consultation paper on "Tariffs for Cellular Mobile Telephone Service" provides information on tariffs offered by the operators. Table 6.1 shows the average tariffs based on the tariff plans reported to TRAI. Given the competitive nature of the market, a number of plans are reported to the Authority, but only a subset of these are actually offered in the market. The table gives the average monthly charges (i.e. equivalent of monthly rentals) and airtime charges for all subscribers and is obtained by dividing rental revenues and call charge revenues by subscriber base and total minutes of use respectively. As can be seen from the Table, the average tariffs are significantly lower than those specified in the standard tariff package.

**Table 6.1: Average tariff levels for cellular services, March 2002**

	Monthly charges (Rs.)	Charge per minute (Rs.)
<b>Metro</b>	195	2.02
<b>Circle A</b>	253	1.43
<b>Circle B</b>	139	2.55
<b>Circle C</b>	200	1.40
<b>All India</b>	202	1.89

Source: TRAI Consultation Paper on Cellular Tariffs

Taking note of the developments in the last 3 to 4 years since the issue of the last tariff order, the TRAI felt the need to conduct another review of cellular mobile tariffs. This was also necessitated by the induction of a third and, in some service areas, a fourth cellular operator, and the accompanying increase in the level of competition. The TRAI wanted to decide whether there was a need to regulate the cellular market in respect of tariff or whether market forces should be allowed to operate.

To address the issue "it would be necessary to assess the degree of competition in the market, the likely trend in the near future in this regard, the downward pressure increased competition is likely to put on the price and whether a cost based tariff will be lesser than the prevailing price level." For this purpose, an exercise was carried out to compute the cost-based tariff. The TRAI compared the computed cost based tariffs with those prevailing in the market. The cost-based tariffs based on geographical averaging of all service areas were found to be close to the market-average tariffs.

It considered two important characteristics of the growth of the cellular market - the relatively higher growth of pre-paid subscribers in comparison to post-paid subscribers, and the considerable increase in the level of competition in a number of service areas. This trend is expected to be more pronounced in all service areas in the near future, with the entry of the incumbent (BSNL) as the third operator and a private operator as the fourth. There is also likely to be some degree of competition from the Wireless in Local Loop with Limited Mobility. The TRAI concluded that "a stage has been reached, when market forces can effectively regulate cellular tariff and the Regulator has to step aside except for a broad supervision in the interest of the consumer. "

The TRAI, therefore, decided to 'forbear' from regulating cellular tariffs subject to the following provisions:

*Reference Tariff Package:* Each service provider should specify one tariff package in the format of the standard tariff package specified earlier by the Authority. This package will be for the post-paid service and will be termed the "Reference Tariff Package of the Service Provider". It should give the monthly rental and airtime charge per minute, with a pulse duration for airtime charge of 30 seconds. This tariff package must be widely publicized by the service provider, and should always be offered to the customer who would be free to decide whether to subscribe to this package or to any alternative tariff package.

*Pre-paid Tariff Package:* At least one denomination of pre-paid cards offered by every Service Provider must be for an amount of Rs.300.00 or less with a corresponding validity period of at least one month.

*Reporting requirements:* Service providers, however, who provide certain other services in the same service area (e.g. Basic Service, National Long Distance, or International Long Distance), should report their tariffs for cellular services at least five days prior to their implementation. These tariffs may be intervened by the Authority for regulatory reasons, e.g. to ensure that there is no cross-subsidization between two or more services of the same service provider. However, if the Authority does not intervene within five working days of the tariff being reported to it, the tariff package may be implemented by the service provider.

*Roaming:* For national and regional roaming there is a cap of Rs.3 per minute and Rs.300 per month for access charge.

## 7 Interconnection and access regulation

The interconnection charges currently in force are as specified in the various licenses. While there is general dissatisfaction with this interconnection regime the regulator has been unable to make any progress given the inability of the government operator to produce the relevant information. While some progress may be expected, given the corporatization of BSNL, it may be some time before BSNL is able to provide the information required by the regulator.

### 7.1 Interconnection terms in licenses

Most of the current interconnection arrangements are specified in the licenses.

In the case of outgoing calls from fixed-line networks, operators are permitted to retain 60% of revenues for national long distance calls. This includes inter-state and any intra-state calls terminating outside the local area on another network. For international calls the originating operator retains 45% of revenue. The operator does not receive any revenue for calls from other fixed-line networks terminating on the operator's network.

The Government has allowed the basic service providers offering WLL services to retain 5% of BSNL's or MTNL's charges for calls routed through their fixed-line networks, in line with the revenue sharing arrangement for cellular operators.

For fixed-mobile interconnection, cellular operators are required to pay to DoT the prevailing fixed-line charge for calls which originate on the cellular network and terminate on DoT's fixed-line network, making the effective access charge 100% of the revenues collected for the fixed-line portion of the call. As a part of the introduction of WLL the Government has allowed the cellular operators to retain 5% of MTNL's or BSNL's charges for (STD and ISD) calls routed through their fixed-line network. Currently, fixed-line operators do not pay any termination charge for terminating calls on the mobile network. TRAI is considering implementation of a calling party pays cellular tariff structure under which the originator of a call to a cellular network would pay the entire tariff and no charges would be levied on the terminating cellular user.

### 7.2 Fixed-Mobile Interconnection

The cellular license provides some of the terms for interconnection between cellular operators and BSNL/MTNL. For example, the license specifies the mobile party pays regime for fixed-mobile calls. However, the license stipulates that a separate license agreement must be signed between the two parties. So far negotiations to resolve differences between the two sides on the terms of the interconnect agreement have not been successful. TRAI has finally issued its determination in order to resolve the two major points of dispute.

#### 7.2.1 Number and Level of Interconnection

The TRAI had ordered the provision of multiple Points of Interconnections "at every technically feasible location" in 1997 in the PSTN to Mobile tariff dispute of 1997. Based on this order, the cellular operators have been requesting for interconnection at the SDCA level. This implies providing interconnection at the level of local networks. Their argument is that in the absence of multiple POI, calls are required to be hauled to the SSA TAX, which may result in higher call charges for both PSTN and cellular subscribers.

According to BSNL, with about 2,650 SDCAs in the country, it would be "a rather unmanageable task to operate and maintain such large number of POIs and provide for inter network accounting and settlement, as well as to manage the necessary technical arrangements at all these POIs." Moreover, this highly decentralized type of interconnection would also violate the network hierarchy as Circle Cellular networks cover a large geographical area and as such should be interconnected only with the corresponding long distance network of the Circle. BSNL also argued that with increased number of POIs, mobile operators could bypass the long distance networks of basic service providers.

On this basis, BSNL requested that the number of POIs should be limited to a maximum of 3 to 4 in a Circle, i.e., Level I and a few Level II TAXs. Also Level II interconnections should be based on the justification of a high usage route between GMSC and the Level II TAX.

TRAI considered the following issues in arriving at a decision:

- In the interest of customers, multiple points of interconnect should be provided between the two networks.
- if POIs are to be provided at the SDCA level, the number of POIs will become very large, which will be difficult to manage.
- The cellular network in circles cover a large geographical area and should therefore normally, be interconnected at the level of long distance network.
- maintaining the integrity of the network and conformance to fundamental technical plans are important considerations, which need to be kept in view.
- providing POIs at the SDCA level may result in an increase in the requirement of USO funding due to the likely adverse effect of such interconnection regime on intra-circle long distance revenue of basic service providers.

TRAI made the following determination:

- for metro cellular operators who provide service in the metro cities of Delhi, Mumbai, Chennai and Kolkata and its adjoining areas, the lowest level where interconnection (at the request of interconnection seeker) should mandatorily be provided by the BSNL, is up to the level of tandem exchanges.
- for cellular telecom circle operators covering a large geographical area, interconnection should be with the long distance network of the circle i.e., at the TAX level.
- The normal routing hierarchy for all types of intercircle and internetwork calls is to hand over the call to a Level I TAX, which in turn routes the incoming traffic lower down the hierarchy i.e. to Level II and then to the local network at the SDCA level. This normal hierarchy should be followed for calls originating in mobile network and terminating in a fixed network.
- However, for traffic terminating in the LDCA, the Gateway MSCs may at the request of the interconnection seeker, be directly connected to Level II TAXs, i.e bypassing Level I TAX, in order to give the cellular operator greater flexibility and smoother flow of traffic. POIs below TAX and tandem level may also be provided with mutual agreement.

### 7.2.2 Access Charges

The terms of interconnection between Basic Service Providers and BSNL provides for the BSP to retain 60% of the NLD charges and pass on 40% to BSNL. The cellular operators have argued for similar interconnection terms. Currently, they are allowed to retain only 5% of the NLD revenues.

The issue of access charges has been addressed by TRAI in its regulation *The Telecommunication Interconnection (Charges and Revenue Sharing) Regulation 1999*. The prevailing interconnection regimes were those embedded in the licenses for the respective service providers, and the TRAI had followed the main features of these different regimes in specifying revenue shares for basic and cellular mobile service providers in the May 1999 Regulation. After examining the issue whether the prevailing system should be altered, i.e. whether cellular mobile service providers should get a share of the revenue from long distance calls, the Authority had decided against any such change.

The Authority has decided not to provide for such revenue sharing. An important reason for this decision is that while basic service providers have an access deficit to make up from long distance and international call charges, the situation regarding cellular mobile sector is different. For the latter, profitability has been built into the specified tariffs that are based on "median" cost estimate (and not on a lower estimate based on costs of an efficient service provider).

The TRAI concluded that it would ultimately like to move to a system of cost-based charges for usage of network elements. In order to obtain the information for estimating these charges the TRAI is in the process of requiring the operators to implement a system of accounting separation. Once this system is established and costs of network elements estimated, the interconnection arrangement would be changed from the current revenue sharing to a system of cost-based usage charges.

According to reports, the private NLD operator Bharti is negotiating a fresh interconnection agreement with cellular operators. Though the final revenue share formula has not yet been hammered out, Bharti has offered cellular operators 10 per cent revenue for mobile-to-mobile calls terminating at cellular networks,

while cellular operators want 25 per cent revenue for terminating calls. Currently, the cellular operators do not get anything for calls terminating in their networks. For outgoing mobile-to-mobile calls, both the cellular operators and the fixed-line operators have agreed to increase the revenue share to 25 per cent from the existing 18 per cent. For calls originating from mobile networks and terminating at fixed-line networks, the cellular operators want revenue share to be hiked from 18 per cent to 25 per cent. For incoming fixed-line to mobile calls, Bharti and cellular operators have not yet finalized the revenue share agreement. BSNL gives only five per cent to the cellular operators for calls originating from their networks. Cellular operators get nothing for calls terminating in their networks. It is expected that Bharti would become preferred carrier for the cellular operators for STD routing.

The average tariff for an outgoing international call is Rs 21 per minute. Bharti and Data access get to keep about Rs 9 from an outgoing call on their network while BSNL gets Rs 12. VSNL, in contrast, wants to retain Rs 13.80 per minute, leaving BSNL with only Rs 7.20. This, obviously, is not acceptable to BSNL. For incoming international calls, BSNL gets an average of Rs 7.20 per minute from Bharti and Data Access while VSNL wants to part with no more than Rs 4 per minute.

### **7.3 Hand-over of intra-circle fixed-line traffic**

Bharti, the private basic services operator in the Madhya Pradesh circle, complained to the TRAI that BSNL was not accepting long distance traffic originating from a particular LDCA in the TAX of another LDCA. It claimed that they should be free to hand over calls at any of the BSNL TAXs within the circle, irrespective of the origin of such calls. BSNL, on the other hand, argued that calls originating in a particular LDCA should be handed over only at the TAX of that LDCA and not at any other TAX. TRAI had to basically determine the relevant TAX of BSNL where the long distance traffic originating in the Bharti network and terminating in the BSNL network is to be handed over.

According to BSNL, long distance traffic on their Network is switched and routed, in accordance with the routing discipline stipulated in the National Routing Plan. In a multi-operator environment, it is expected that all the operators will dimension their respective Long Distance Networks based on the originating and terminating traffic generated by the total number of DELs in a LDCA. If the traffic originated in some other LDCA were also to be transited, then the task of planning and dimensioning the Long Distance Network in a Circle would become too difficult.

In support of their contention, BSNL referred to Clause 1.7.6 of the License Agreement, which deals with traffic routing and interconnection of Licensee's Network with DOT's (now BSNL) Network.

“Inter-connectivity for STD/ISD calls shall be ordinarily only between DOT's LDCC TAX and Licensee's LDCC TAX. In case Licensee does not have his own TAX in the LDCC, STD/ISD calls from Licensee's SDCC Tandem/ Local exchange in an SDCA in the LDCA shall be routed to DOT's LDCC TAX. This requires the Licensee to connect to the nearest DOT TAX even for Intra-Circle calls that may be between two LDCCs. However, the Licensee is free to have his Network for carrying the traffic entirely over his own Network within the Circle/Service Area.”

BSNL further brought to the notice of the Authority, their apprehension that any violation of Network Routing discipline of near-end handover would result in a loss of long distance revenue share.

The TRAI concluded that according to the interconnection clause inter-network connectivity will have to be at equivalent levels, and that Traffic Routing and numbering in the licensee's network shall have to be as per the National Numbering and Routing plans. This would normally result in near-end hand-over of traffic by the licensee to BSNL for onward transmission. However, the provision does give the licensee the option of carrying a long distance call entirely on his own network within the circle/service area. In accordance with this provision a licensee may carry a long distance call without handing it over at the near end to BSNL if it does not utilize any part of the latter's network and manages origination, transit and termination of the call entirely on his own network. This is a situation in which the call is entirely handled by the network of the licensee. Further, although not quite explicitly, this provision also gives the licensees the option of a far end hand over for termination in the other operator's network.

On this basis, the TRAI concluded that both the parties to the interconnection, i.e., the licensees and the BSNL, are permitted near-end as well as far-end hand-over of calls for termination only in each other's network. However, intermediate hand over of calls for transiting is not in conformity with the license

agreement as well as Interconnect Agreement and, therefore, neither the licensee nor the BSNL is obliged to accept any such hand over of calls.

#### **6.4 Retail tariffs and revenue sharing**

In January 2001, BSNL reduced long distance call charges by extending the duration of peak pulse rates for distance categories 50 to 200 km compared to the TRAI standard tariff package for basic services. However, these revised pulse rates would apply only to "intra-circle calls originated by the telephone subscribers of BSNL, and terminating in the basic service network". COAI and ABTO sought the TRAI's intervention and requested that in the interest of level playing field the revised pulse rates (or tariffs) should also apply:

- (a) to calls from fixed network to cellular mobile;
- (b) for calculating the carriage charge to be paid by cellular mobile network to the fixed network;
- (c) for the carriage charge paid by private basic service providers to BSNL on intra-circle fixed to fixed network calls.

The TRAI based its determination on the provisions of the Telecommunication Interconnection (Charges and Revenue Sharing) Regulation of May 1999. According to this, for domestic long distance calls from cellular mobile to basic service subscriber, the basic service provider has to be paid Rs. 1.20 per metered call, with the number of metered calls measured at the pulse rate applicable to basic service long distance calls. Therefore, "as far as conveyance on fixed network is concerned from the point of interconnection (POI) to the terminating short distance charging centre (SDCC), the pulse rate for calls from cellular mobile should be the same as applicable to basic service calls, i.e., it should be the same as the reduced pulse rates that will be applicable from 26 January, 2001".

For domestic long distance calls, the Regulation stipulates that "the originating/transit service provider to pay Rs. 0.48 per unit of measured call for traffic delivered from its network to the network of the transit/terminating service provider for the call units measured at the point of interconnection for its further carriage from the point of interconnection to destination, based on the STD pulse rate".

The TRAI determined that to ensure 'non-discrimination' and a 'level playing field' BSNL's revised pulse rates should also apply to the inter-network calls as requested by COAI and ABTO. "The underlying principle is that the same tariff should be levied for same network elements used. As such, the same tariff should be applied for the fixed leg of an inter network call that traverse the same distance on the fixed network, irrespective of its termination in a fixed or a mobile network."

#### **7.4 Reference Interconnect Offer**

According to India's WTO commitments

Interconnection with a major supplier will be ensured at any specified feasible point in the network as indicated in the licence. Such interconnection is provided:

- of a quality no less favourable than that provided for its own like services or for like services of non-affiliated service suppliers or for its subsidiaries or other affiliates;
- upon request, at points in addition to the network termination points offered to the majority of users as per licence conditions, subject to mutually agreed charges.

It will be ensured that a major supplier will make publicly available either its interconnection agreements, or a reference interconnection offer.

A service supplier requesting interconnection with a major supplier will have recourse, either at any time or after a reasonable period of time which has been made publicly known to a domestic regulatory authority to resolve disputes regarding appropriate terms, conditions and rates for interconnection within reasonable period of time, to the extent that these have not been established previously.

Interconnection has been a continuing problem between BSNL and private cellular operators. Even after six years, private cellular operators do not have a formal interconnect agreement with the incumbent PTO. TRAI currently follows a policy of industry negotiations on Interconnection Agreements and Regulatory intervention is sought only for dispute resolution. However, this approach has not been successful so far

with protracted negotiations and endless disputes. This is attributed to the reluctance of the incumbent dominant operator to quickly reach a mutually agreed Interconnect arrangement.

So far the TRAI has made only minor changes to the interconnection charges, based on revenue sharing, specified in the licenses. The TRAI would like to move to a system of cost-based origination, termination and transit charges.

The TRAI recently issued an Order directing operators with 'significant market power' to publish a Reference Interconnect Offer. According to the TRAI:

Though many countries have favoured a policy of industry negotiations on Interconnection Agreements and Regulatory intervention is sought only for dispute resolution, there is a growing consensus that formulation of advance regulatory guidelines is important for establishing proper environment to facilitate Interconnection. This has its basis in the fact that traditionally the incumbent or dominant operator has often been found reluctant to quickly reach a mutually agreed Interconnect arrangement. In a number of cases, the various operators do not reach a conclusion on the issue of interconnection, preferring the Regulator's intervention. In both these cases, Regulatory intervention becomes necessary to help finalize interconnection arrangements.

An accepted regulatory principle in many countries is to ensure that the service provider with significant market power publishes a Reference Interconnect Offer (RIO) stipulating the various technical and commercial conditions including a basis for Interconnect Usage Charges for Origination, Transit and Termination. On the basis of this RIO new entrants can seek interconnection and agree upon specific usage based charges. The TRAI has released a model Reference Interconnect Offer (RIO) providing the basic framework based on consultation with service providers. The model RIO consists of Articles and Schedules and is accompanied by Guidelines. The model RIO, which is generic in nature, brings forth the various principles and elements involved in proper and effective interconnection.

Based on the given model, service providers with significant market power will submit their proposed RIOs to the Authority for approval. On approval this will be published. A published RIO may undergo any change only with the prior approval of the Authority. Interconnection Agreements are required to be entered into by and between all Service Providers based on the RIOs so published. However, the two parties concerned i.e. the interconnection provider and the seeker may modify and/or add to the terms and conditions stipulated in the published RIO by mutual agreement and enter into an individualized agreement.

A service provider shall be deemed to have significant market power if it holds a share of 30% of total activity in a licensed telecommunication service area. These services are categorized as Basic Service, Cellular Mobile Service, National Long Distance Service and International Long Distance Service.

The Reference Interconnect Agreement provides the following schedules:

- Points Of Interconnect;
- Charges for Miscellaneous Services;
- Charges for Sharing of Infrastructure Elements;
- Schedule of Standards and Specifications;
- Interconnect Usage Charges (IUC) for use of Unbundled Network Elements (UNEs) involved in Carriage of Various Types of Calls;
- Interconnect Usage Charges.

## **7.5 Carrier Selection**

With the opening up of the National & International long distance markets to multiple operators the customer will be able to select his long distance carrier for routing his long distance calls. Carrier selection can either be 'call by call', in which a carrier access code is required to be dialed for the routing of each call, or carrier pre-selection (CPS), in which the subscriber indicates his choice of carrier in advance for automatic routing of calls, without having to dial the carrier access code each time. The TRAI has issued a direction to the operators concerned to carry out the required system modifications within a stipulated time frame, and provide customers with both 'call by call' carrier selection as well as carrier pre-selection.

All cellular operators in whose service area, a POP has been established by a NLD operator, are required to implement both types of carrier selection within six months of the receipt of request from the concerned NLDO. The ILDO license granted by the Government permits the ILDOs to establish their gateway switches at the level-I stations in the country and they can directly pick up ILD traffic from the GMSC of CMSO at these stations, without the need for routing such traffic through the NLDO network. Accordingly, CMSOs are required to implement carrier selection in their respective service area within six months of the receipt of request from the ILDOs concerned.

In the case of basic service, the first private NLDO has established his 'point of presence' in 18 LDCAs. The BSOs including the incumbents will implement call-by-call carrier selection in these 18 LDCAs, in three months, and pre-selection in six to nine months. As and when the NLDO establishes a new POP in other LDCAs, the entire process of implementation of both modes of carrier selection (Call by Call /CPS) is to be completed within nine months of the POP being established.

International calls require 21digit storage capacity in the local exchanges of the BSOs. Since this is not available at present in most of the exchanges of the incumbent, carrier selection for ILD is to be implemented within an extended period of 18 months.

At all other stations, except the Level-I stations where direct connectivity between the access provider's network and the ILDO's network have been permitted as per the license agreement, access providers should route ILD calls through an NLDOs' network. For the present, the choice of the NLD network for routing ILD calls will be exercised by the access providers. Giving simultaneous choice of NLDO and ILDO to the subscriber will require major system modifications in the access provider's network, which may not be feasible in the next 18 months. A decision in this regard would be taken after a detailed cost benefit analysis during the financial year 2003/2004. Since the subscriber, under the current arrangement, will have the facility to pre-select national as well as international carriers separately, the absence of simultaneous pre-selection is not expected to be a serious disadvantage.

Until the full facility of carrier selection becomes available, all default traffic, is to be routed by the access providers through the NLDO / ILDO of their choice for onward carriage to the dialed destination. Once the process of providing call selection facility has been provided there will be no default traffic. For all long distance calls where the subscriber has not pre-selected his carrier and has also failed to dial the Carrier access code (CAC), the calls will be routed by the access providers (BSOs/CMSOs) to a recorded announcement which will request the subscriber to select his long distance carrier either on the basis of call-by-call or pre-selection.

The cost of implementing carrier selection is a part of the system set up cost for providing interconnection between the access providers network and that of the NLDO /ILDO. These costs incurred by the Access provider will be borne by the NLDO/ILDO. The amount to be paid and the mode of payment will be decided by mutual negotiations. An operator who is a BSO as well as an NLDO /ILDO, is required to maintain separate accounts of the two services and receive and pay as if they were two separate business units. If the operators concerned fail to reach an agreement about costs within thirty days of the setting up of the POP by the NLDO/ILDO in the concerned service area, they can approach the Authority for a determination.

Access providers will have to conduct a 'Polling process' to ascertain the choice of each subscriber in a fair and objective manner. The operators are required to take steps for customer education and also give adequate publicity to the polling, so that customers are fully aware about the choice of long distance carrier available to them. The polling process should be completed within two months after receiving a request for setting up of Carrier Pre-selection (CPS) from the NLD/ILD operator in a service area.

## **8 Spectrum Management**

In India, the Indian Telegraph Act 1885, and the Indian Wireless Telegraphy Act 1933, and the related rules and procedures provide the legal basis for spectrum management. The National Frequency Allocation Plan (NFAP) 1981, and subsequent revisions or amendments, derived from the Table of Frequency Allocations of the Radio Regulations, in consultation with the national users through the forum of Standing Advisory Committee on Radio Frequency Allocations (SACFA), provides the basis for assignment of frequencies.

The Wireless Planning and Coordination (WPC) Wing of the Ministry of Communication is the Radio Regulatory agency responsible for radio frequency spectrum management, including licensing. The WPC is

headed by the Wireless Adviser to the Government of India. WPC Wing, grants Wireless Licenses under Section 4 of the Indian Telegraph Act, 1885, for operating captive radio communication stations in the Fixed/Land, Land Mobile, Maritime Mobile and Aeronautical Services.

The Spectrum Management Committee's report points out that one of the main reasons for spectrum constraints in India is the use of the 'non-NATO band' by the defense agencies. All the NATO countries and several NATO allies have adopted the 'NATO Band' for their defense requirements of the spectrum. In these countries the non-'NATO Band' therefore accommodates most of the commercial/public service telecommunications. However, several countries, including India, have not adopted the 'NATO Band' for their defense spectrum requirements. As a result in India both defense and private users compete for the same spectrum bands. These factors have resulted in major spectral constraints, in the bands allotted to defense. The relocation costs are expected to be quite significant. For example, 'in order to release spectrum in the 1700-2000 MHz band, the IAF, the major user of the band, would need to digitize its existing analog systems in Gujrat & Maharashtra sector at the cost of Rs.1.4 billion. The cost of this digitization in Central, Eastern and North-eastern sector comes to approximately Rs.2.05 billion.' These issues need to be sorted out on a long-term basis.

The Spectrum usage charges at present consist of "License Fee" and "Royalty Charges". The "License fee" is charged to cover application processing costs and the "Royalty" is for the frequency management costs which include monitoring, inspection, coordination and infrastructure development. Central government ministries/departments are totally exempt from payment of a spectrum fee. State government departments pay only a license fee. Central/State public sector undertakings are levied both license fee and royalty, as in the case of the private sector.

## 8.1 Spectrum assignment

The frequencies are assigned by WPC from the designated bands prescribed in National Frequency Allocation Plan - 2000. (NFAP-2000). Appropriate frequency spots in GSM band of 890-915 MHz paired with 935-960 MHz are assigned to the first three cellular operators and 1710-1785 MHz paired with 1805-1880 MHz is assigned to fourth cellular operator. A cumulative maximum of up to 4.4 MHz + 4.4 MHz is permitted. Based on usage, justification and availability, additional spectrum up to 1.8 MHz + 1.8 MHz making a total of 6.2 MHz + 6.2 MHz, may be considered for assignment, on case-by-case basis. The frequencies assigned may not be contiguous and may not be the same in all cases.

For Wireless in Local Loop (WLL), on installing the Point of Presence (POPs) in a Short Distance Charging Area (SDCAs), a Basic Telephone Service licensee is eligible to apply for allocation of WLL spectrum to the extent of 2.5 MHz + 2.5 MHz. After completion of the first phase of roll-out obligations as stipulated in the guidelines for grant of license for basic services and effectively utilizing the allocated spectrum, the licensee would be eligible to apply for further allocation of WLL spectrum to the extent of 1.25 MHz+1.25 MHz for such SDCAs in which POP has been established. Further spectrum would be allocated in a similar manner after the completion of second and third phase of roll-out obligations.

The eligibility for WLL spectrum has been further modified by sub-dividing the SDCA into three sub-categories: (1) Rural, (2) Semi-urban, and (3) Urban (a categorization familiar in census operations). For the purposes of coverage of SDCA, each of these categories should be equally covered for each phase of the roll-out prescribed. Therefore, in the first phase, where 15% of the short distance charging areas is to be covered in a circle, each of the three categories should be covered by the operator in equal proportions. This was meant to ensure that WLL was truly being used to extend the network in the rural and semi-urban areas.

The revenue share paid by the licensee includes a 2% revenue share towards WPC charges covering royalty payment for the use of cellular spectrum of *up to* 4.4 MHz + 4.4 MHz and license fee for cellular mobile handsets and cellular mobile base stations and also for possession of wireless telegraphy equipment. Any additional bandwidth, if allotted, would attract additional license fee as revenue share (typically 1% additional revenue share if bandwidth allocated is up to 6.2 MHz + 6.2 MHz in place of 4.4 MHz + 4.4 MHz.).

## 8.2 Proposed spectrum assignment process

The Communications Convergence Bill provides for certain changes in the way spectrum is managed. The Bill provides for the establishment of a Spectrum Management Committee with the Cabinet Secretary as its

Chairman and consisting of other members notified by the government. The Government will also notify the Wireless Advisor to the Government of India as Spectrum Manager, to act as Member-Secretary of the Spectrum Management Committee.

Subject to general supervision and control of the Spectrum Management Committee, "after meeting the requirements of the Central Government and of State Governments for fulfilling their vital needs including those of defense, national security and public service broadcaster, the Spectrum Manager shall make the spectrum available, to the maximum extent possible, for assignment by the Commission, both in the shared as well as in the exclusive bands."

The Communications Commission will be responsible for assignment of the non-strategic and commercial spectrum to various users. Assignment in the shared band will be done by the Commission only with the prior approval of the Spectrum Management Committee. Before assigning any part of spectrum, the Commission will notify schemes or plans for such assignment, after such public hearing as it may consider appropriate. The Government may, by notification, determine the class or classes of persons or services for preferential assignment of any frequency or spectrum by the Commission.

## 9 The Wireless in Local Loop (WLL) with Limited Mobility Dispute

The Basic Service License stipulates Wireless in Local Loop (WLL) as the preferred method for providing basic service. According to NTP 1999, WLL frequency is to be awarded to the basic service providers based on the payment of an additional one-time fee over and above the fixed service entry fee. The basis for determining the entry fee and the basis for assigning WLL frequency is to be recommended by the TRAI. All operators utilizing WLL should pay a license fee in the form of a revenue share for spectrum utilization. This percentage of revenue share is over and above the percentage payable for the fixed service license.

### 9.1 Emergence of the idea of 'WLL with Limited Mobility'

All the basic service licensees have deployed WLL Systems as Fixed Wireless Access. MTNL had introduced WLL with Limited Mobility based on CDMA technology during 1999. The handset offered by MTNL to the subscribers was identical to a cellular handset. MTNL had approached TRAI in August 1999 for approval of tariff package for providing "Cellular Mobile Telecom Service using CDMA WLL technology with Limited Mobility". The DoT also clarified that "NTP 1999 does not provide for any service known as Cellular Mobile Service with Limited Mobility". Hence the name of the service was later changed by MTNL to "Cellular Mobile Telecom Service using CDMA technology". At around the same time the Telecom Commission announced that "all new cellular mobile service providers will be technology wise neutral. However, the technology must be digital." This made it possible for MTNL to continue with its plans to offer cellular services using CDMA technology. TRAI had raised a number of queries relating to the tariff report of MTNL and a consultation paper was also prepared on the basis of the information provided by MTNL highlighting the relevant policy issues. However, with the restructuring of the TRAI in early 2000 the matter did not proceed any further.

In October 2000, the Department of Telecommunications informed the TRAI that the Telecom Commission had recommended the use of hand-held terminal in Local Area (SDCA) by the subscribers of basic service operators using the Wireless in Local Loop (WLL) platform. This was because the cost of the hand-held instrument is around Rs.6,000 against the cost of about Rs.15,000 for a fixed wireless instrument. The letter also informed that,

"keeping in view the need of telecom policy for free competition, the objectives of NTP 1999, the subscriber convenience, available fruits of technology and above facts, Government felt that hand-held terminals in Wireless Access technology with Full Mobility within the Service area may be permitted to the Basic Service Operator also".

DoT requested TRAI to make recommendations with respect to the

"scope of Area of hand held subscriber terminals under Wireless Access System operations, the basis for assigning WLL frequency & the amount of entry fee and spectrum charges as a percentage of revenue to be charged from the Basic Service Operator for extending the above facility in respect of existing as well as future Basic Service Licensees, so as to ensure a level playing field with the Cellular Operators."

### 9.2 Cellular operators' opposition to WLL with Limited Mobility

Cellular operators opposed the DoT proposal, mainly on two grounds. They argued that WLL with limited mobility is a "back door" entry for the basic service operators in the market licensed to the cellular mobile operators. Given mobility, WLL service would become quite comparable to the fully mobile services offered by the cellular operators. However, it would be preferred by the consumers because of its low tariff, which the basic service operators would be able to offer as a result of their ability to subsidize it out of the more remunerative long distance market. This would impact the market of the cellular operators adversely and disturb the level playing field between the two types of service providers. Secondly, any type of mobile service can be offered to subscribers only under the license granted for mobile services and not for basic services. By permitting mobility based on WLL system, the terms of the mobile license would be violated. According to the cellular operators if the basic service operators plan to offer WLL with mobility they should obtain the same license as obtained by the cellular operators on the same terms and conditions.

**Table 9.1: License fees paid by the cellular operators and the basic services operators**

Rs. (in millions)	Cellular		Basic
	Old	New	
<b>Category A</b>			
A P	3412.5	1030.0	350.0
Gujarat	6116.3	1090.0	400.0
Karnataka	4432.3	2060.0	350.0
Maharashtra	5691.3	1890.0	1150.0
Tamil Nadu		790.0	500.0
<b>Category B</b>			
Haryana	917.9	214.5	100.0
M.P	177.8	174.5	200.0
Punjab	4028.1	1517.5	200.0
Rajasthan	1302.3	322.5	200.0
Rajasthan*	1215.4		200.0
U.P (E)	1897.8	452.5	150.0
U.P.(W)	1384.7	305.4	150.0
Kerela		405.3	200.0
<b>Category C</b>			
Bihar	819.2		100.0
Himachal Pradesh	51.0	10.0	20.0
<b>Metros</b>			
Chennai	185.3	1540.0	500.0
Chennai*	170.5		
Mumbai	843.3	2036.5	1150.0
Mumbai*	915.4		
Delhi	654.8	1707.0	500.0
Delhi*	822.9		
Calcutta	215.3	780.0	250.0
Calcutta*	276.2		

*Notes:* \* For some states and the metros, the license fees are different for the two licensees.

Cellular Old : the entry fee for the first two cellular licenses. This is after the implementation of the migration package as a part of which the license fee instalments paid until a certain date were treated as entry fee.

Cellular New : This is the winning bid for the fourth cellular license.

Basic : This is the fixed entry fee for new basic services licenses. Only six licenses had been issued after the initial auction of basic licenses. Like the initial cellular licenses these were also migrated to a revenue sharing regime with instalments for the winning bid being paid up until the cut-off date, being treated as the entry fee.

*Source:* ITU

### 9.3 Approval of WLL with Limited Mobility and 'level playing field'

In its recommendations the TRAI argued that, "WLL mobility is not the same as that of the Cellular Mobile Services, and that customers should not be denied the benefits provided by technology if the disturbance expected in the level playing field can be addressed by making some necessary policy changes." The TRAI's view was that although both WLL systems and Mobile systems employ similar air interface and network infrastructure such as cells, there are significant differences between the two. In cellular mobile systems there is a mobile exchange called mobile switching center (MSC) capable of extensive mobility management/roaming function. On the other hand, the WLL systems are engineered essentially to provide the so-called 'last mile' linkage with the existing exchange, and these do not have mobile switching centers as part of the WLL system. Considering this essential difference the TRAI concluded that extension of WLL mobility only up to the local area, i.e., SDCA would be the most optimal solution and serve interest of telecom growth in the country best.

TRAI made the following recommendations to the government:

- Limited mobility should be allowed for WLL provided by Basic Services Operators. The extent of mobility should be within the local area, i.e. the Short Distance Charging Area (SDCA).
- The entry fee and license fee as a percentage of revenue should not be altered and should be as already recommended for Basic Services.
- All calls from mobile WLL should be charged at the highest Basic Service call charge.
- The rental charge would be fixed by TRAI taking into account the relevant costs of the last mile connections through WLL.

In an attempt to provide a 'level playing field' between cellular and WLL service the TRAI also made the following recommendations for the cellular operators

- Revenue share as license for the CMSOs should be reduced to 12%, the revenue share for BSOs in Metros and Category 'A' Circles, from the existing 17% of the annual revenue.
- CMSOs may be permitted to provide fixed phones based on their GSM network infrastructure. Their services can be of help in providing telephone connections in the rural areas and in case they provide such telephones that will qualify for the USO funding
- CMSOs can retain 5% of the long distance charges collected by them, and so far fully passed on to DTS/BSNL, to meet costs of collection and bad debt.

The TRAI also argued that "there is no reason to re-consider the issue of entry fee of Basic Service Providers, particularly because the purpose of entry fee was mainly to deter non-serious entry of service providers."

The guidelines issued by the DOT for Basic Service emphasized the requirement of limiting the WLL mobility to the SDCA. "Basic Service Operator shall be allowed to provide mobility to its subscribers with Wireless Access Systems limited within the local area i.e. Short Distance Charging Area (SDCA) in which the subscriber is registered. While deploying such systems, the operator has to follow the numbering plan of that Short Distance Charging Area (SDCA) and it should not be possible to authenticate and work with the subscriber terminal equipment in SDCAs other than in which it is registered. The system shall also be engineered so as to ensure that hand over of subscriber does not take place from one SDCA to another SDCA while communicating."

### 9.4 Dispute resolution process

The Cellular Operators' Association of India filed a petition in the Telecom Disputes and Settlement Appellate Tribunal (TDSAT) seeking a direction that the Telecom Commission should not consider the recommendations of TRAI on the issue of limited mobility. The TDSAT did not issue the direction but issued an interim order to the effect that "in the meantime, any license granted will abide by the result of this petition. If any license is granted, it will contain a clause that the license will be revoked, if the decision goes in favour of the petitioners in this case."

The dispute reached the Prime Minister's Office who referred the matter to the Group on Telecom & IT Convergence set up under the Chairmanship of the Finance Minister. The Group was directed to consider and submit its recommendations on the following:

- (a) Whether the New Telecom Policy 1999 permits "Limited Mobility" service to be offered by Fixed Service Providers.
- (b) If it is permitted under NTP 1999, how it can be introduced to be consistent with the principle of level playing field among different categories of operators with the objective of assured services at cheapest possible rates.
- (c) If it is not permitted under NTP 1999, how the policy can be suitably modified to facilitate limited mobility to ensure faster achievement of the targets for tele-density as well as rural and remote area telephony at cheaper and affordable rates.

Since the issue of offering limited mobility to basic services operators was raised before the TRAI, the Group decided that it was not necessary to reopen the issue of enabling limited mobility technology to the basic services operators. "Where technology allows an expanded service to the advantage of consumers, especially in rural areas, the general approach should be to interpret policy so as to permit maximum competition keeping always in view the need for a level playing field." The Group decided that the revenue sharing arrangement for long distance calls using WLL should be the same as the revenue sharing arrangement for long distance calls using cellular mobile. "Since WLL limited mobile subscriber can be said to have the benefit for some (but not all) of the benefits that accrue to regular cellular subscribers, the sharing ratio for these two should be equalized. This means that the present ratio of 60:40 for WLL subscribers should be reduced to 5:95 in respect of, but only in respect of, those subscribers who use the facility of WLL with limited mobility through hand-held sets."

The Group chose not to address the question of a separate one-time entry fee for WLL. "The decision whether or not to charge a separate one-time entry fee for utilizing WLL being, in the opinion of this Group, a matter exclusively in the domain of TRAI (Section 11(1)(c)), it must rest there." TRAI had not recommended charging any separate one-time entry fee.

Following the Group's recommendations the TDSAT rejected the COAI appeal challenging the government decision to allow basic service operators to offer WLL with limited mobility. The COAI has now taken the matter to the Supreme Court. The dispute between the basic and cellular operators is somewhat complicated by the fact that two major cellular operators, Bharti and Tatas, also have fixed service licenses and the Tatas have already introduced WLL services in some circles and Bharti is reported to be considering the introduction of WLL.

In May 2001, the TRAI announced the rentals for WLL with LM with a floor of Rs.450/- and a ceiling of Rs. 550/- per month. These rentals were higher than those specified for cellular mobile services since the TRAI determined higher costs for WLL with limited mobility. Moreover, the TRAI had specified a floor for the first time. This was intended to address the concern of the cellular operators that basic service providers would be cross-subsidizing this service out of above cost long distance charges. In July 2002 the TRAI amended its earlier Order by reducing the rentals to Rs.200 because of cost reductions, without specifying any floor. Operators could also offer alternative packages as in the case of other services. This order provides an important flexibility to the WLL operators in competing with cellular operators.

### **10 Assessment of approach to competition in telecommunications in India**

The National Telecom Policy of 1994 announced a series of specific targets to be achieved by 1997. It recognized that government financial resources would be inadequate to achieve these targets and concluded that private investment was required to bridge the resource gap. The Government invited private sector participation in a phased manner from the early nineties, initially for value added services such as paging services and cellular mobile telephone services and thereafter for fixed telephone services.

However, the results of the privatization were not entirely satisfactory. Private sector entry was slower than what was envisaged in NTP 1994. The government viewed these developments with concern and recognized the need to take a fresh look at the policy framework for this sector. This resulted in the New Telecommunications Policy 1999. NTP 1999 clearly stated as one of its objective to "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". Prior to NTP 99 this did not appear to be an explicit objective of the reform process. Private sector entry was to be tolerated only in order to add to the government's investment in the telecom sector. This is apparent from the fact that the liberalization of the telecom sector in India was initiated with several restrictions on entry. Initially, the government auctioned only two cellular and one basic service license for each circle/metro. The private investors bid such high amounts that the business was rendered unviable and for a while it seemed the entire attempt to attract private investment would be a major failure. Following this experience, the government has generally followed an approach of unlimited entry with payment of entry fee and a revenue share. With the exception of cellular services, all other service licenses are unlimited. Cellular licenses are limited because of spectrum availability. The other major licenses – basic, national and international long distance, and Internet service provider (ISP) - are unlimited.

The TRAI has recently completed a review of cellular tariffs and has released a consultation paper on basic services tariffs. These documents provide TRAI's assessment of the current and expected levels of competition in these sectors.

With respect to the cellular market, the TRAI has concluded that "a stage has been reached, when market forces can effectively regulate cellular tariff and the Regulator has to step aside except for a broad supervision in the interest of the consumer." In the light of this assessment the TRAI has decided to 'forbear' from regulating tariffs in the cellular sector and has left the tariffs to be determined by market forces.

In the case of basic services the TRAI's recent consultation paper on 'Tariffs for Basic Services' notes that the share of BSNL and MTNL in basic services continues to be over 98% of the total market. Moreover, "the projections available from the new entrants (i.e. the private sector operators) indicate that BSNL and MTNL will remain the dominant operators in terms of market share in the near future and will continue to be so for some time to come." With respect to the long distance market, both NLD and ILD, the TRAI's view is that it "is likely to evolve towards a multipolistic market structure sooner than later." However, at present since the private NLD operator has established POPs in only 18 LDCAs out of 321 and is in a position to pick up traffic from less than 10% of the SDCAs, "the incumbent will continue to dictate NLD tariff for quite some time". The TRAI perceives the competitive trends more pronounced in the ILD sector, with the entry of two new operators. In addition IP telephony is expected to exert competitive pressures in this segment.

Overall the TRAI concludes that "while the market for access is heavily skewed towards the incumbent and is likely to remain so in the near and mid-term, the trends are different in both the NLD and ILD segments. In these segments competition would be more vibrant, and this would need to be factored in for regulatory policy formulations."

### **10.1 License conditions inhibiting competition**

In spite of the avowed policy of unlimited entry there are several restrictions and disincentives on entry.

There are serious and binding roll-out obligations in the case of basic services and national long distance. The main purpose of these obligations is to prevent "cherry picking" and ensure coverage of remote and rural areas. However, the roll-out obligations impose a cost on the operator and act as an entry deterrent. With the setting up of the Universal Service Fund, which will provide subsidies for rural and remote area coverage, there is little rationale for these roll-out obligations. The roll-out obligation for the NLD operator effectively mandates a national NLD network and rules out the possibility of regional networks interconnecting with each other to create a national NLD network. Such an alternative may be attractive given that a large proportion of the NLD traffic is regional.

Both cellular and basic operators pay a revenue share at 12% of adjusted gross revenues (AGR) in metropolitan areas and category A circles, 10% in category B circles and 8% in category C circles. International and national long distance service providers are required to pay an annual revenue share, at the rate of 15% of the adjusted gross revenue. These revenue shares include the contribution to the Universal Service Fund. ISPs do not pay any revenue share and this is also extended to their provision of Internet Telephony services. The revenue shares are in addition to fixed entry fees ranging from Rs.10 million to Rs.1.15 billion depending on the circle for basic services and a Rs.1 billion entry fee for a national long distance license. The entry fee for the fourth cellular license has been determined through a bidding process and ranges from Rs.175 million to over Rs.2 billion.

As a part of the migration package for the initial licensees, revenue shares were meant to replace the high bids of the initial auctions. Therefore, the rationale of such revenue shares disappears if licenses are unlimited and there is no bidding. Revenue shares could have a rationale in the case of cellular services where limited licenses are still bid out. In this case the bid amount and the percentage revenue share together represent the value of the limited spectrum which comes bundled with the license. For example, a higher revenue share percent should result in lower bids, given everything else. However, in all other cases revenue shares may be considered as raising the cost of entry by raising prices and limiting the market.

The licenses place artificial and inefficient boundaries across services. These restrictions generally prevent the licensees from reaping economies of scale and scope. The main rationale for not allowing national long distance service providers to carry intra-circle long distance traffic is to preserve, for the basic services operator, the cross-subsidy element in the long-distance tariff. The concept of WLL with limited mobility, with lower license fees compared to cellular operators, has also been presented as a means of extending the network to rural and remote areas using 'cheap' wireless networks. However, given that the technology is capable of full mobility, limited mobility represents an artificial and unnecessary restriction. The TRAI has also justified allowing the cellular operator to retain only 5% of the long distance revenue, as opposed to 60% for the basic operators, in order to enable the latter to cross subsidize rentals and fulfill roll-out obligations, especially with respect to Village Public Telephones. However, basic service operators can only retain 5% of the revenues from WLL calls. This is a complicated attempt to establish a 'level playing field'. The restriction on Internet telephony, disallowing domestic PC to phone calls while allowing the same for international calls, is once again to protect the basic and national long distance licensees from competition. In accordance with the generally accepted principle that regulation should be limited to bottleneck facilities and not the services, these restrictions on services are unnecessary.

### **10.2 Spectrum assignment and pricing**

Spectrum assignment is another source of uncertainty in the sector. The WLL dispute brings into focus the problems with the system of spectrum assignment in India.

In spite of the initial unfavourable experience with auction of cellular licenses the government issued the fourth cellular license through an auction process. Therefore, there appears to be a clear realization that the number of cellular licenses will have to be limited because of limited availability of spectrum, and that auctions are the most transparent process for allocating licenses, the initial unfavourable experience notwithstanding.

In the case of basic services, while the initial licenses were auctioned, the current policy is to issue multiple licenses, on payment of a fixed entry fee. The basic service licenses provide for the use of Wireless in Local Loop (WLL), subsequently transformed to WLL with limited mobility. WLL with limited mobility is considered a part of the basic service license, even though it uses spectrum in the same manner as cellular mobile services, and, as claimed by several observers, may be indistinguishable from cellular mobile services. In the case of WLL, as in the case of cellular licenses, there is an initial assignment of spectrum but additional spectrum is not guaranteed.

Therefore, the resulting situation is one in which there are two services, Cellular Mobile and WLL with Limited Mobility, both of which use spectrum but are subject to different entry conditions. While entry into cellular mobile is limited, with licenses being auctioned, entry into WLL with limited mobility is not limited and the associated license is not auctioned. Hence there is a fundamental asymmetry in the treatment of the two services in the assignment of spectrum. This asymmetry can be seen in the entry fee for the two licenses.

The Spectrum Management Committee, the WPC Group on Spectrum Pricing and the TRAI acknowledge that proper pricing of spectrum, possibly through auctions, would lead to efficient utilization of spectrum. However, none of them recommend auctioning spectrum right away. The two standard objections to spectrum auctions are that they are complicated and that they raise the cost of providing service. As regards the first objection, there is now sufficient experience and understanding to enable design of appropriate auctions and avoid a number of common pitfalls. In any case, the government is already auctioning cellular licenses and plans to use auctions for allocating the universal service fund. As regards the second objection, the main point is that it is inefficient to try to keep the cost of service low by under pricing certain inputs. Under pricing of spectrum leads to its inefficient utilization and inappropriate technology choices. It is preferable to charge an appropriate price for spectrum and use the resource raised to provide subsidies

through the USO fund. In fact the communications minister has recently complained about the inefficient use of spectrum. One way to address this problem is by pricing the spectrum appropriately.<sup>3</sup>

The approach of auctioning spectrum licenses recognizes that it is the limited availability of spectrum, which limits the number of operators providing any service-using spectrum. Therefore, the more efficient approach is to auction the spectrum license rather than the service license. In order to implement this, the spectrum right should not be bundled with service licenses. For example, among basic service providers only those who plan to offer WLL services would need to obtain a separate spectrum license.

As pointed out by NTP 1999, the funds raised from spectrum auctions could be used to meet relocation costs as well as funding of universal service requirements.

### 10.3 Interconnecting with the incumbent

BSNL, even without MTNL, is in an extremely powerful position with a national basic service, national long distance and national cellular license. This power is attenuated only by the inherent public sector inefficiency resulting from government interference.

This asymmetry of power and network size puts the private operators in a weak bargaining position with respect to BSNL, especially when negotiating for interconnection. The industry continues to function largely on the basis of the interconnection terms embedded in the license conditions. The appropriateness and fairness of these interconnection terms are highly questionable given that the licenses were framed by a DoT, which was both the licensor and the operator. In addition most of the interconnection charges are in terms of revenue shares. This creates inflexibility in tariffs since changes in tariffs have implications for interconnection payments.

The VSNL - BSNL ILD interconnection dispute is a good example of this confusion. Following the reduction in ILD tariffs, BSNL was able to obtain revised revenue sharing terms from the private ILD operators. As per the terms of the VSNL privatization, BSNL required VSNL to match the revenue shares negotiated with the private operators, if it wanted to retain BSNL traffic. However VSNL is reluctant to match these rates claiming that it would be losing money. Simultaneously, Bharti has complained to the TRAI that its revenue share arrangements with BSNL are not fair and were entered under duress. However, Data Access, the other private operator, has told the regulator that the rates negotiated with BSNL fully cover its costs and that TRAI should not intervene in this dispute.

TRAI has been consistently expressing reservations about the current interconnection charges but has been unable to come up with a better alternative. The main problem is the lack of data from the incumbent operator. For example, the TRAI had released a consultation paper on accounting separation in May 2000. However, it has made little progress given that BSNL has yet to complete even its transition to commercial accounting system following corporatization. Even after this, BSNL may not be in a position to provide the cost of unbundled network elements, necessary for arriving at cost based interconnection charges. On July 12, 2001 the TRAI notified "The Telecommunication Interconnection (Reference Interconnect Offer)" Regulation. Questions about availability of information from BSNL are likely to arise in this case also in the process of approval of the RIO by the TRAI.

### 10.4 Tariffs for basic service

One key issue for viability of entry into basic services is the level of rentals. In the first tariff order the TRAI decided to keep rentals below its estimated cost 'with the objective of making them affordable'. The new rentals were obtained by increasing the levels of rental prevailing in 1993 to account for the rate of inflation

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<sup>3</sup> According to Mr.Sunil Mittal of Bharti, "Delhi which is touching 700,000 customers was struggling on the frequency. We were promised that we will be given more spectrum, but the promise was in 1800, and at least finally we have been able to get the spectrum in 900 MHz, which significantly improves our capability to handle the tremendously ever-increasing traffic that is happening in Delhi. I think we are now good for a large customer base that can be added with spectrum available. The good news is, we have reached 8 MHz, but we have a provision which will allow us to go to 10MHz once we reach our next threshold, which has to be decided by the government. For this purpose, 1% extra revenue share based on adjusted gross revenue has to be paid to the government, *but we believe this is a low price to be paid for such an expensive spectrum that we desperately needed (italics added).*" (Webcast July 31, 2002, Q1 Earnings Call)

and 'some of the real income increase since then'. In addition to the existing classification of rural/urban and exchange capacity, the TRAI introduced three sub-classifications – low user, general and commercial.

At the end of the first year of the three-year period TRAI withdrew the planned increases for the general user category. In addition BSNL/MTNL never implemented the commercial category tariffs. The net result is that as of April 2002 there is only one set of rentals for all subscribers, rural as well as urban. The only difference is a lower rental for rural subscribers, in exchanges with a capacity of less than 1,000 lines.

The major lesson of the first tariff order is that the entire exercise of working out fully allocated costs of access, local calls and long distance calls is neither necessary nor possible at this point of time. It is not possible because of BSNL's inability to provide appropriate data. For example, according to the BSNL's first annual report for the year ending March 31, 2002, " the Company presently does not have a system of identifying the National Long Distance Revenue and has provisionally assessed 30% of the total revenue as NLD revenue and has used the same for calculation of license fee on NLD." It is not necessary because tariffs are unlikely to be based on costs worked out through a Fully Allocated Cost Method. In the first tariff order, rentals are based on some undefined notion of 'affordability', and other tariffs are set so as to effectively enable the operator to recover total costs and earn a reasonable rate of return.

The TRAI is committed to reducing cross-subsidies in tariffs and has attempted to achieve this through its

**Table 10.1: Monthly rentals for basic services**

Rs.per month		Low user		General	
		Prior	Order	Actual	Order
<b>Exchange system capacity</b>					
<b>Up to 999(first figure for rural and second for urban)</b>	50/75	70/120	70/120	120/160	70/120
<b>1,000 to 29,999</b>	100	120	120	160	120
<b>30,000 to 99,999</b>	137.5	180	180	220	180
<b>100,000 to 300,000</b>	180	250	250	310	250
<b>Above 300,000</b>	190	250	250	310	250

Source: TRAI Consultation Paper on Cellular Tariffs

phased out first tariff order. Interestingly, the latter phase of its tariff order was overtaken by the entry of competitors in both the national and international long distance markets. However, the TRAI has been ambivalent about increasing rentals in the interest of affordability. The government operator BSNL has also been reluctant to increase rentals, partly out of political compulsions. TRAI's attempts to target the rental subsidy by creating separate categories of commercial and non-commercial subscribers has not been successful. BSNL has also not adopted the strategy of offering price packages, which seek to increase revenues through price discrimination, as is being done by cellular operators.

The vanishing cross-subsidy from international and national long distance tariffs as a result of competition is supposed to be replaced by the Universal Service Fund (USF). However, the USF is only meant for extending the network to unviable areas. It does not make up for the below cost rentals. In such a situation, below-cost rentals are unsustainable and will act as a "constraint" on entry of private operators. One suggested solution is to continue with the long distance cross-subsidy through access charges. However, this may introduce a new set of distortions in the form of "inefficient bypass".

There is a need to formally recognize the use of a price cap arrangement for the entire basket of basic services. In the presence of political and other obstacles to increasing rentals there is little danger of TRAI cross-subsidizing its competitive long distance services with rentals and local call charges, where it has market power. This should give BSNL/MTNL the flexibility to develop alternate tariff packages, as is

happening in the cellular sector, and which was envisaged in the first tariff order. Such alternate tariff packages may do a better job of targeting different categories of consumers.

## 11 Conclusions

Some of the current license conditions are the vestiges of an evolutionary past. There is therefore a need to review the license conditions and discard those that are unnecessary and dysfunctional.

It is widely considered that spectrum needs to be treated as a limited resource, upon which important infrastructures depend. Hence, ideally, the licensing and regulation of spectrum should be separated from the licensing and regulation of the services which use spectrum. Given the limited nature of spectrum it also needs to be priced appropriately, possibly through auctions.

Interconnection is likely to be a major problem in the future given the asymmetric bargaining position of BSNL/MTNL. This could be resolved by setting norms based on efficient costs. This will be possible only with the implementation of accounting separation by BSNL. Interconnection disputes, like those between VSNL and BSNL, should be resolved by negotiation between the parties, with possible mediation by the TRAI. As business disputes, they should be left to the regulator to resolve without the need for intervention from Government or Ministry officials in order to avoid weakening the office of the regulator.

Finally, there is a need to remove the implicit political pressures on BSNL/MTNL to maintain low rentals for basic services. It is because of these pressures that rentals have not increased--in spite of TRAI's attempts. Such increases in rentals are conducive to the viability of basic services and can be achieved while protecting low-income subscribers.

More generally, more of an arms-length relationship could be established between the Government and BSNL/MTNL particularly since the recent corporatization of BSNL has yet to make any significant difference to the current situation in this regard. This also leads to a rather unique situation in India where the regulator has to regulate a 100% Government-owned and -controlled incumbent. Regulation generally assumes the objective of profit-maximization on the part of those being regulated. It is in this context that incentive regulation makes sense, where the incentive is increased profits. However, public sector undertakings controlled by government do not necessarily follow a profit maximization objective, nor do profits typically form an important element in performance measurement in such undertakings. It is in this context that private operators also fear "irrational competition" from the Government-owned incumbent.

Finally, many of the distortions in the Indian telecommunication system can be said to have their origin in the universal service objective. There is a basic conflict between achieving universal service objectives through prices and service conditions, and allowing competitive market forces to operate unfettered. At times, the universal service objective has been utilized to serve other interests. The Universal Service Fund was set up in order to resolve this basic conflict and achieve the universal service objective in a competitively neutral manner. The universal service argument must, therefore, be used most sparingly for justifying constraints on competitive market forces through license conditions, tariffs or access charges. Given the low per capita income and hence the large magnitude of the universal service requirement, the distortions introduced by these constraints are likely to be significant relative to the situation in developed countries, where the universal service problem is relatively small. The Universal Service Fund provides a competitively neutral instrument for achieving universal service objectives. Should the universal service levy be inadequate, the Government could also ensure that funds from the sector, in the form of entry fees, revenue shares and spectrum charges, are ploughed back into the sector through the universal service fund and not diverted out of the sector into the general government budget.

**COMPETITION POLICY IN TELECOMMUNICATIONS: THE CASE OF INDIA**

**Appendix 1: Selected Economic and Social Indicators for India**

	1950-51	1960-61	1970-71	1980-81	1990-91	1991-92	1993-94	1995-96	1997-98	1998-99	1999-00	2000-01
<b>ANNUAL GROWTH RATES</b>												
GDP at constant prices		3.91%	3.70%	3.08%	5.62%	1.30%	11.32%	15.13%	12.99%	6.50%	6.10%	3.95%
Per capita net national product, at 1993-94 prices		1.85%	1.22%	0.68%	3.18%	-1.49%	6.63%	10.39%	8.87%	4.38%	4.35%	1.86%
Industrial production		7.04%	6.06%	4.37%	7.83%	0.66%	8.46%	23.30%	13.14%	4.09%	6.68%	5.04%
Agricultural production		4.06%	2.24%	1.74%	3.81%	-1.95%	8.11%	2.16%	2.86%	7.62%	-1.29%	-6.66%
Gross domestic savings (as per cent of GDP)	8.90%	11.60%	14.60%	18.90%	23.10%	22.00%	22.50%	25.10%	23.10%	21.70%	23.20%	23.40%
Consumer price inflation	2.14%	6.11%	7.86%	9.07%	13.47%	17.81%	21.32%	16.93%	13.11%	3.38%	3.74%	
<b>FOREIGN TRADE (USD million)</b>												
Exports	1,269	1,346	2,031	8,486	18,143	17,865	22,238	31,797	35,006	33,218	36,822	44,560
Imports	1,273	2,353	2,162	15,869	24,075	19,411	23,306	36,678	41,484	42,389	49,671	50,536
Foreign exchange reserves	1,914	390	584	5,850	2,236	5,631	15,068	17,044	25,975	29,522	35,058	39,554
<b>SOCIAL INDICATORS</b>												
Population (million)	361.1	439.2	548.2	683.3	843.4	856.8	892.1	928	964.4	982.7	1001.1	1027
Life expectancy at birth (years)	32.1	41.3	45.6	50.4	58.7	59.4	61.1					
Literacy rate (percentage)												
(a) Male	27.16	40.4	45.96	56.38	64.1	..	69	69	73	..	..	75.85
(b) Female	8.86	15.35	21.97	29.76	39.3	..	44	46	50	..	..	54.16
Total	18.33	28.3	34.45	43.57	52.2	..	57	58	62	63.1	..	65.38

Source: Economic Survey 2002

## **Appendix 2: Major Telecom Industry Developments in India**

Mid '80s	Department of Telecommunications set up
Mr. '86	VSNL incorporated to provide international telecom services
Apr. '86	MTNL incorporated to provide fixed-line telephone services in Mumbai and New Delhi
Dec. '91	DoT invites bids from Indian companies for cellular licenses in the four metropolitan circles
May '94	Government announces the National Telecom Policy, opening up the basic service sector to private players
Sept. '94	Entry guidelines for basic services announced
Nov. '94	Licenses were issued to cellular operators in the four metros
Jan. '95	Tenders floated for basic operators as well as cellular operators in non-metro sectors.
Mar. '95	Paging services by private operators commence
Oct. '96	Licenses for 20 cellular circles issued
Jan. '97	Telecom Regulatory Authority of India established by government
Sep. '97	Basic operators sign license agreements with DoT
Nov. '98	ISP business opened up to operators other than DoT and VSNL
Mar. '99	Government announces NTP 1999
Jul. '99	DoT announces Migration Package for existing operators' licensing costs, subject to compliance with certain conditions
Jan. '00	TRAI (Amendment) Ordinance 2000 redefines the role of TRAI by splitting it into two, with one acting as a regulator and the other as an arbitration unit in the form of a tribunal
Aug. '00	Government announces guidelines for opening up domestic long distance telephony for carrying both inter-circle and intra-circle traffic, with no restriction on the number of players TRAI issues the first tariff order and cuts domestic and international long distance telephony charges.
Jan. '01	The Department of Telecom opens up basic services to unlimited competition and allows basic operators to provide WLL services on a restricted basis.
Apr. '01	Government takes up the limited mobility matter and TDSAT decides to hear government decision on the issue before it delivers judgement Government appointed committee says that WLL limited mobility should be allowed, but it recommends new and stricter roll-out plan TRAI gives further recommendation on limited mobility, setting guidelines for rentals and setting network architecture rules.
Aug.'01	Opening of National Long Distance Service to competition
Sept. '01	Fourth Cellular licenses issued
Jan. '02	Bharti starts cellular to cellular long distance services with sharp cuts in tariffs
Feb. '02	Government transfers control of VSNL to Tatas through sale of strategic holding
Mar. '02	TDSAT issues verdict in favour of introducing WLL with Limited Mobility. COAI appeals decision in Supreme Court
April-02	ILD sector opened to competition. End of VSNL monopoly.
	Government allows restricted IP Telephony
May '02	Bharti offers ILD services with sharp cuts in tariffs
Sept. '02	TRAI decides to 'forbear' from regulating cellular tariffs

