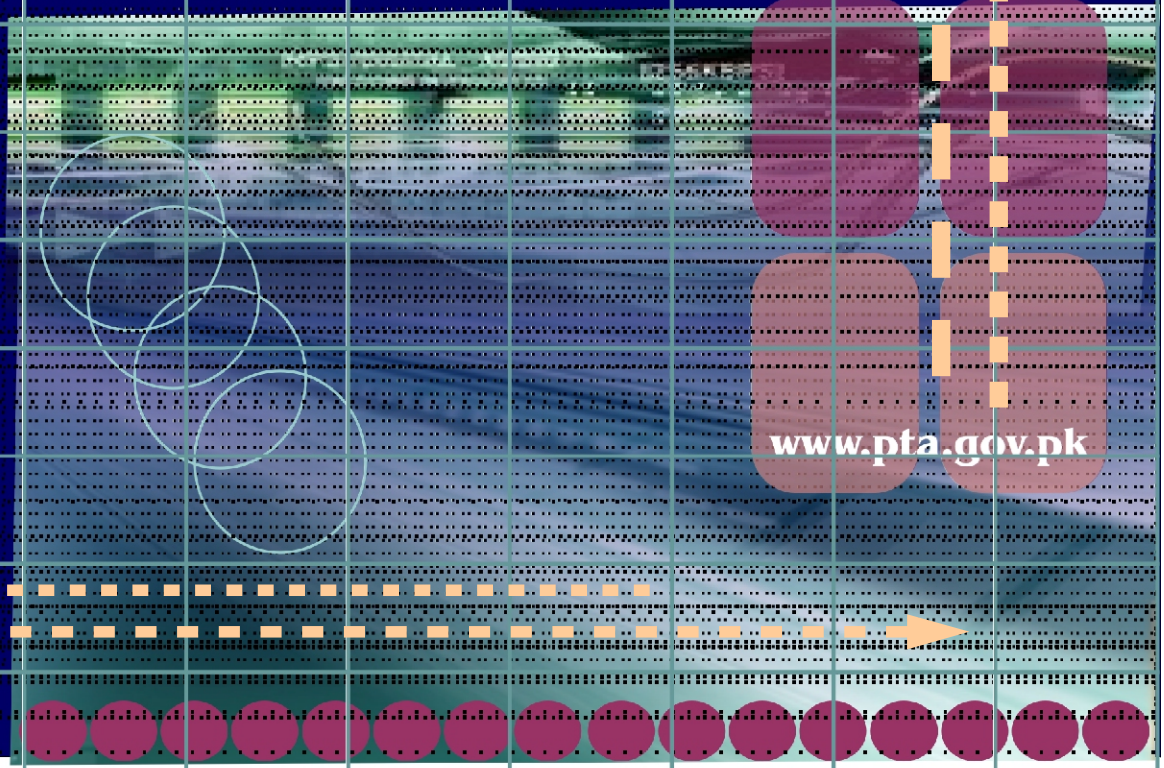
Pakistan Telecommunication Authority

Annual Report 2006



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Annual Report 2006

PAKISTAN TELECOMMUNICATION AUTHORI

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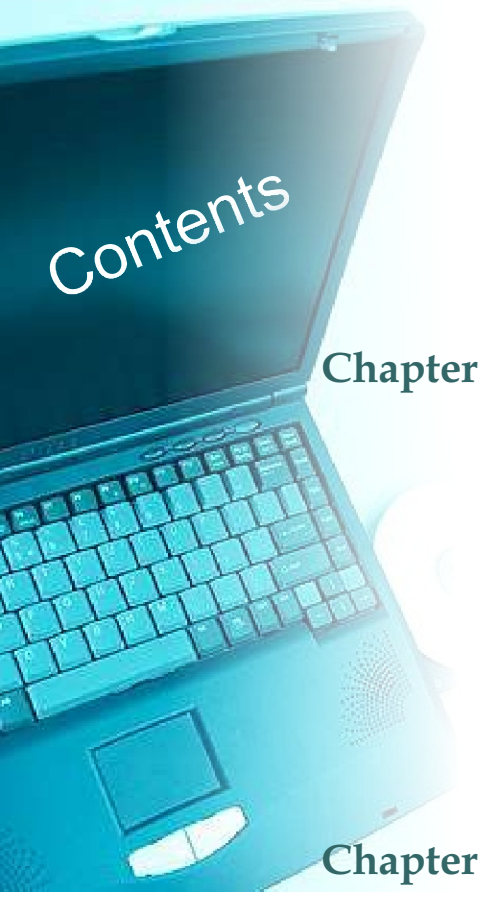

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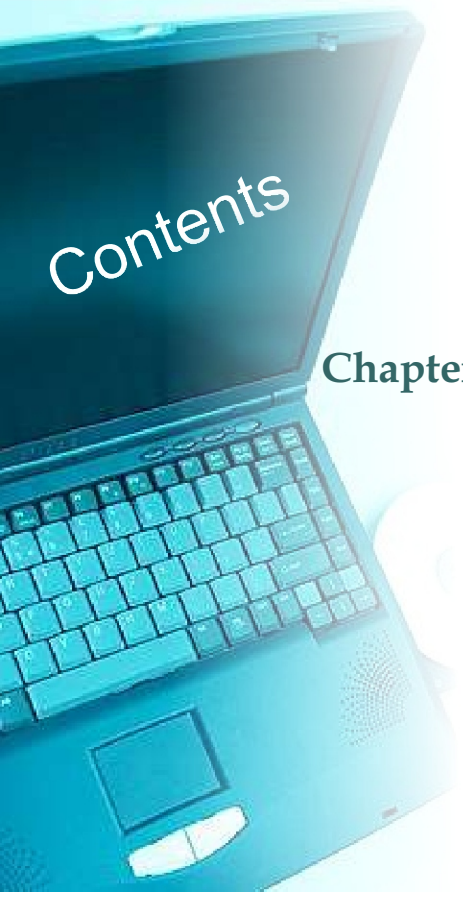

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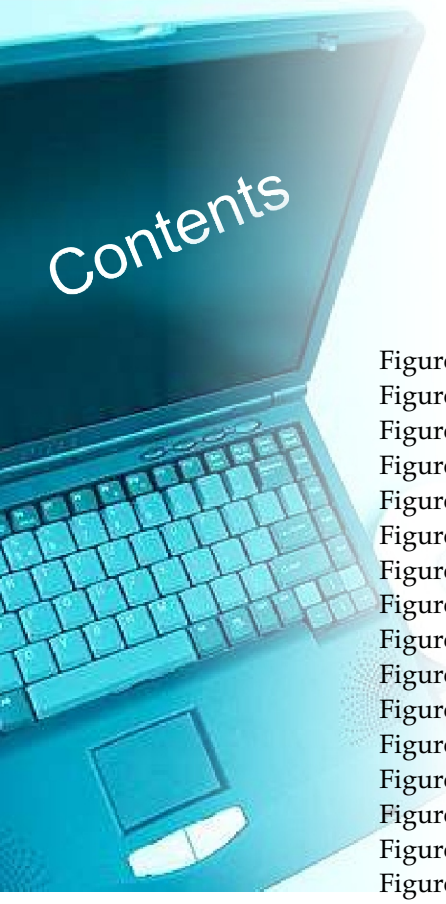

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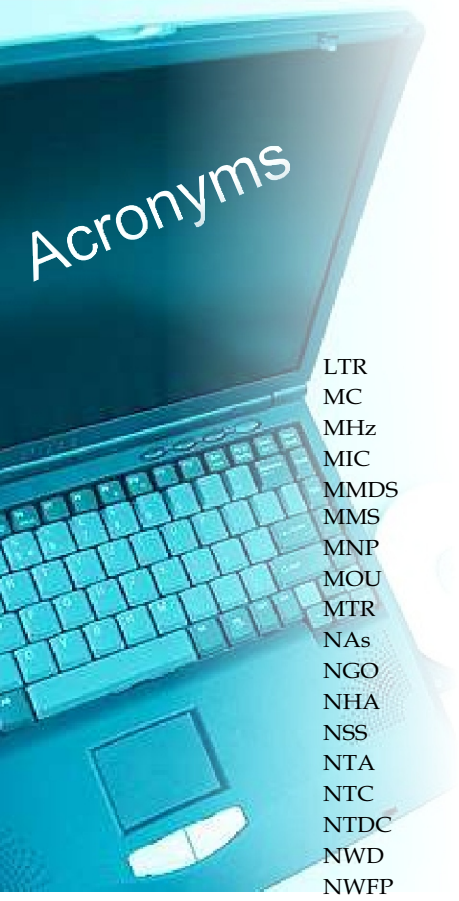
Acronyms

AJ&K	Azad Jammu & Kashmir
APC	Access Promotion Contribution
APT	Asia Pacific Telecommunity
ARPU	Average Revenue Per User
ASR	Accounting Settlement Rates
BP	British Petroleum
BTRC	Bangladesh Telecom Regulatory Commission
CVAS	Class Value Added Services
CBR	Central Board of Revenue
CDMA	Code Division Multiple Access
CDR	Call Detail Record
CEO	Chief Executive Officer
CMA	CDR Management and Analysis
CMO	Cellular Mobile Operator
CMTS	Cellular Mobile Telephone System
CPP	Calling Party Pays
CRTC	Canadian Radio-television & Telecommunication Commission
CVAL	Class Value Added Licenses
CVARC	Class Value Added Registration Certificate
dBs	Decibels
Dbw/Hz	Decibels Watts per Hertz
DPLC	Domestic Private Lease Circuit
DSL	Digital Subscriber Line
EDGE	Enhanced Data-Rates for GSM Evolution
FAB	Frequency Allocation Board
FCC	Federal Communications Commision
FDI	Foreign Direct Investment
FLL	Fixed Local Loop
FnF	Family and Friends
GA	General Assembly
GDP	Gross Domestic Product
GHz	Gigahertz
GPRS	General Packet Radio Service
G-RAX	Global Regulatory Exchange Award
GSMA	Global System for Mobile Association
GST	General Sales Tax
ICT	Information and Communication Technologies
IDC	International Data Corporation
IDRC	International Development Research Center of Canada
ILF	Initial License Fee
IM	Information Memorandum
IMEI	International Mobile Equipment Identity System
IN	Intellegent Network
IPLC	International Private Leased Circuit
ISP	Internet Service Provider
IT&T	Information Technologies and Telecommunication
ITR	Islamabad Telecom Region
ITU	International Telecommunications Union
Km	Kilometers
LDI	Long Distance & International



LTR	Lahore Telecom Region
MC	Management Committee
MHz	Megahertz
MIC	Ministry of International Affairs & Communication
MMDS	Multichannel Multipoint Distribution System
MMS	Multimedia Message Service
MNP	Mobile Number Portability
MOU	Minutes of Use
MTR	Multan Telecom Region
NAs	Northern Areas
NGO	Non Government Organization
NHA	National Highway Authority
NSS	Network Surveillance & Security
NTA	National Telecom Regulatory Authority
NTC	National Telecommunication Corporation
NTDC	National Transmission and Dispatch Company
NWD	Nation Wide Dialling
NWFP	North West Frontier Province
OFAN	Optical Fiber Access Network
PAF	Pakistan Air Force
PARCO	Pak-Arab Refinery Limited
PC	Personal Computer
PCO	Public Call Office
PMD	Pakistan Mobile Number Portability Database
PPP	Purchasing Power Parity
PRF	Policy & Regulatory Forum
PSTN	Public Switched Telecommunication Network
PTA	Pakistan Telecommunication Authority
PTCL	Pakistan Telecommunication Company Limited
PTVC	Pakistan Television Corporation
QoS	Quality of Service
RCDF	Rural Communication Development Fund
RIO	Reference Interconnect Offer
SATRC	South Asian Telecommunications Regulators' Council
SCO	Special Communication Organization
SIM	Subscriber Identity Module
SMP	Significant Market Power
SMS	Short Message Service
SNGPL	Sui Northern Gas Pipe Line Limited
SSGCL	Siu Southern Gas Company Limited
STM	Synchronous Transfer Mode
SUPARCO	Space and Upper Atmosphere Research Commission
TRA	Telecommunication Regulatory Authority
UCC	Uganda Communications Commission
UHF	Ultra High Frequency
UK	United Kingdom
UNDP	United Nations Development Program
USA	United States of America
USTTI	United States Telecommunication Training Institute
VAS	Value Added Services
VHF	Very High Frequency
VoIP	Voice over Internet Protocol
VSAT	Very Small Aperture Terminal
WAPDA	Water & Power Development Authority
WLL	Wireless Local Loop
WTDC	World Telecommunication Development Centre
ZTBL	Zarai Taraqiati Bank Limited

Chairman's Note

It is my pleasure to present to you the Pakistan Telecom Authority Annual Report 2006, covering developments and growth in telecom sector of Pakistan during fiscal year 2005-06.

This year is yet another landmark in the history of telecommunications in Pakistan and the Authority's outstanding achievements are testimony of accelerated and sustained growth in all segments of the sector. PTA successfully implemented the Government decision for telecom deregulation in AJ&K and NAs where PTA issued licenses to leading cellular mobile companies licensed to operate in these areas. The telecom deregulation in AJK & NAs is a historical event that has opened doors of economic and social growth in that area. Telecom development in Balochistan remained a high priority area for PTA where the Authority's efforts proved to be fruitful and its teledensity increased almost from 5% to 11%. Similarly harnessing grey traffic, determinations on interconnection and reduction in settlement rates by PTA have resulted in dramatic reduction in telecom tariffs. We expect that the implementation of Mobile Number Portability, Mobile Handset Theft detection system and infrastructure licensing would further boost the telecom growth in the coming years.

Unparalleled growth in telecom sector is obvious from tremendous increase in telecom subscribers. The mobile subscribers have reached 37 million (July' 06). Every month on average over 2 million subscribers are added showing a growth rate of around 170% in just one year. Owing to the Government's sound economic reform agenda and Authority's investor friendly approach, telecom sector attracted an investment of about US$ 2 billion in 2005 - 06, which becomes 54% of the total FDI in the country. Telecom sector of Pakistan has contributed over Rs. 77 billion to national exchequer through taxes and license fees in 2005-06. Teledensity of the country increased by about 120 percent in last year. All this has resulted in social uplift of all strata of the society and increased employment opportunities in the country. PTA strives for a sustained growth of telecom sector in Pakistan and to this end we always try to keep a futuristic approach. At the moment the broadband penetration in the country is alarmingly low. PTA is making all efforts and taking all possible measures to increase the broadband penetration in near future.

I am pleased to convey to you that today, being one of the fastest growing telecom sector across the region, we have been recognized internationally and received various awards including GSMA award and we are now advising our regional counterparts like Bhutan, Bangladesh, Uganda and Oman to increase their teledensities.

The PTA Annual Report 2006 portrays our efforts that are visible in the escalated telecom sector of Pakistan and its spill over effects on the economy. I appreciate my team's efforts for doing a good job. I particularly acknowledge the efforts made by Economic Affairs team in preparing this report. I assure all stakeholders that PTA will continue to strive for best regulatory practices in future.

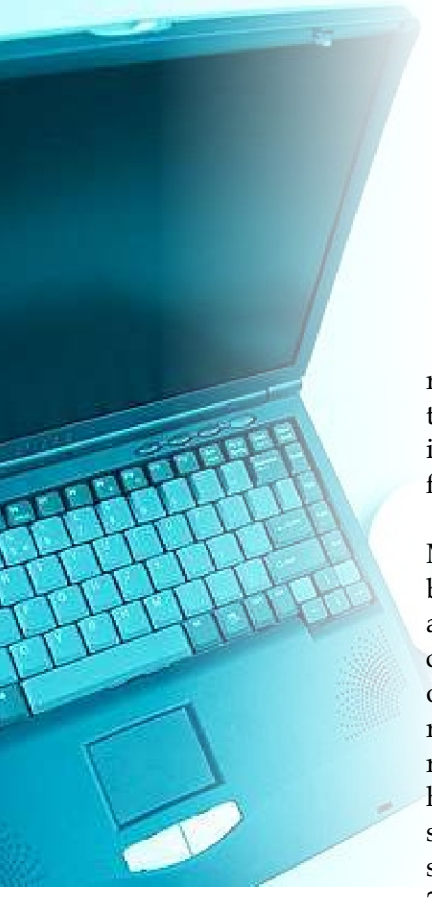
Major General Shahzada Alam Malik, HIM (Retd)
Chairman

Executive Summary

Pakistan Telecom Sector experienced yet another year of fastest growth in every segment of telecom sector in 2005-06. Satisfied telecom consumers, motivated service providers and stimulated market would not have been possible without appropriate regulatory measures and sound economic situation in the country. Today, Pakistan telecom sector has surfaced in the international arena as fastest growing and the most dynamic sector across the region. The international recognitions given to the country in the field of telecom include the GSMA " Government Leadership Award 2006, Global Regulatory Exchange Award and Lirne Asia "Best Website of the Regulator Award" which are evidences of our efforts in the right direction. We, as a regulator are now providing assistance & facilitation to the newly liberalizing regional telecom sectors and our assistance to countries including Bangladesh, Bhutan, Oman and Uganda have certainly helped them in forming their own deregulation models.

With the increased competition in the telecom sector, number of regulatory issues cropped up and resolved during 2005-06. PTA completed the long awaited liberalization in AJK & NAs and four leading mobile operators were licensed for provision of services in the territory, fixed line licensing is underway. Similarly, Balochistan was declared as priority area for telecom development and number of regulatory measures were taken to enhance telecom facilities in the province. Today the total teledensity in Balochistan has gone up to almost 11% and 54% of the total population is now covered with telecom facilities. PTA has also taken imperative regulatory measures to tackle the issue of rural communication for bridging the digital divide. Challenges related to mobile services including "Mobile Number Portability" & "Mobile Handset Theft" are being handled appropriately and results would be visible by end of 2006. The determinations on interconnection and approval of Reference Interconnect Offers have revolutionized the mobile market. PTA is also giving special attention to consumer safeguard and conducting regular surveys of all services to check their quality. Grey traffic is another menace which is causing huge losses to national exchequer and PTA is striving hard to overcome this. PTA is also keeping up with the expectations of consumers by resolving their telecom complaints through its fast helpline services.

With the prudent policies of the government and active role of the private sector, the overall teledensity in the country has reached 27% registering an ever-high growth of 120% during 2005-06. Telecom services are available to nearly 78% of the population. Growth in the sector has also created huge investment and employment opportunities in the country. During the year, telecom companies invested more than US$ 2.1 billion in their infrastructure and network expansion. Foreign Direct Investment (FDI) in telecom also crossed US$ 1.9 billion (including US$ 1.2 billion PTCL privatization proceeds) making it 54.1% of the total FDI in the country during the period. The sector generated more than 183,063 employment opportunities during the year. The unprecedented growth in the sector also enabled the operators to earn huge revenues to the tune of Rs. 192.6 billion in 2005-06 where mobile segment has the major chunk (47%) among these



revenues. Government exchequer also received Rs. 77.1 billion during 2005-06 in terms of taxes and duties on telecom sector. The overall economic activity in the sector has also increased the telecom share in GDP to 2% from 1.6% in 2001-02 and is expected to grow further in the coming years.

Mobile cellular segment remained to be most thriving not only in the local telecom sector but also regionally. Over 150% continuous growth rate for last two years placed Pakistan at the top of its regional counterparts. Mobile sector once again remained highest contributor to the national exchequers. The sector contributed Rs. 38.75 billion (65%) out of total tax contribution of Rs. 59 billion in the national exchequer. Yearly average revenues growth of the sector during the last two-years reached 80% with total mobile revenues crossing Rs. 90 billion in 2006. Investment in the sector crossed US$ 1.3 billion, however Average Revenue Per User (ARPU) declined and reached US$ 5.7. As for the subscribers and the traffic mobile sector hit new record in terms of net addition and total subscribers. As of July, 06, total mobile subscribers reached 37 million with net addition of 21.7 million subscribers in 2005-06. The mobile penetration is now touching 24% with highest penetration levels in Sindh province. The mobile networks now cover almost 73% of total population of Pakistan with services of one or all operators in around 1000 cities/towns. The operators performed well during the reported year and Mobilink remained as the SMP operator in the sector with maximum market share both in terms of subscribers and revenues. Total voice and data traffic of the mobile industry grew by more than 100% owning to dramatic drop in mobile tariffs. According to international estimates the mobile subscriber will cross 65.7 million by 2007 .

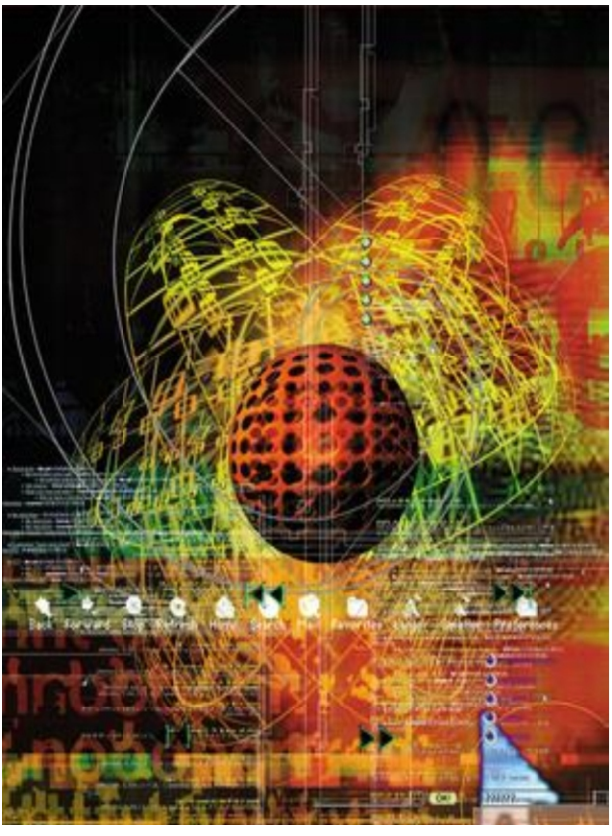
The local loop services also performed well during the year including both wireless local loop (WLL) and fixed local loop (FLL) segments. In the FLL segment 4 companies in addition to incumbent PTCL and NTC started their services. It is expected that 5 more companies would be joining the market by end of this year. However, the concentration of new operators remained to be in the metropolitan cities of the country. The FLL subscribers reached 5.24 million with fixed teledensity touching 3.4%. The pending demand for fixed connections decreased in the reported year from 0.3 million to 0.2 million. The optic fiber length of all the operators collectively reached 11,609 km across the country except LDIs. In WLL segment 4 companies are providing their services in addition to PTCL. As of July, 06, total WLL subscribers crossed 1 million with WLL density reaching 0.72%. Currently 36% of total population of Pakistan is covered by WLL networks. The total cell sites of WLL operators are more than 1000 with increase in its number every month. PTA is making all efforts to increase the WLL density and its coverage in the country.

Intense competition was seen in the Long Distance & International segment of telecom sector where 12 out of 14 new LDI companies aggressively participated in the market and offered bottom low prices for national and international calls. The international call rates are as low as Rs. 0.99 per minute and nationwide call is available at Rs. 0.52 per minute. Due to these reduced tariffs, the overall international outgoing traffic has increased by 173% during 2005-06. Similarly, revenues of LDI companies have also increased by 168% over the last year.

Value Added Services (VAS) are also expanding with the increased use of data communication and affordability of the services. During the last couple of years, growth in VAS has been noted considerably high, however, this growth is not uniform in all its segments. Internet and Payphones services have shown tremendous growth however the broadband proliferation is still low as compared to other peer countries. PTA and Government are making efforts to increase broadband penetration by reducing the broadband tariffs and removing other hurdles in the way of broadband proliferation. At present, there are more than 56,611 broadband subscribers in Pakistan including 26,611 DSL subscribers. On the other hand, Internet subscribers have reached 2.4 million in 2005-06. Similarly, payphone subscribers have shown a growth of 27% reaching 353,194 and the growth is mainly attributed to expansion in WLL payphones services.

Looking at the future telecom scene in Pakistan, it requires convergence of services, elimination of digital divide, effective regulation in changing telecom environment and adoption of potential technologies. The technology, service and infrastructure convergence in Pakistan is taking place at very fast pace. To manage these ubiquitous and converged services, various regulatory functionaries would also need to be merged in order to provide a clear roadmap to the investors. Advance regulatory framework will be catering the needs of social, competition and technical regulations. These regulations would be maintaining a balance between consumer interests and market forces while maintaining an oversight of the market. On the technological front, PTA is continuously observing the developments in the telecom sector world over and is determined to expand and facilitate the adoption of appropriate advanced telecom technologies in the country.

1 Economic Performance of Industry



Economic Outlook

Despite the international oil price hike, lack of conflict resolution in almost all the global hotspots and natural disasters, the world economy exhibited a reasonable growth of 4.8% during 2005 which in-fact went above the expectations of many economists.

China and Pakistan emerged as countries to be on the high growth trajectories in region. During the fiscal year 2005-06, Pakistan economy also faced two major external shocks: an unprecedented increase in oil prices and the devastating earthquake that struck AJ&K region on 8th October 2005. However, Pakistan economy absorbed both of these shocks thanks to its comfortable foreign exchange reserves and a strong economic base. The economy of Pakistan grew by 6.6% during 2005-06 against a target of 7% for the year whereas last year growth was 8.4%. The per capita income of Pakistan also reached US$ 847 registering a growth of 14% over the last year.

Table - 1

GDP Growth Rates

	2003-04	2004-05	2005-06
World	4.0	5.3	4.8
Asia	6.5	7.1	6.9
South Asia	7.7	7.2	7.8
Pakistan	6.4	8.6	6.6
India	8.5	7.5	8.1
Bangladesh	5.3	6.3	5.6
Sir Lanka	5.9	5.5	5.7
China	10.0	10.1	9.9

Sector Overview

Along with the surge in national economy, the telecom sector is also growing at an astounding pace providing an impetus to the private business in the country. This momentous growth is surely made possible through the Government's prudent and liberal telecom policies which have created healthy competition, investment friendly environment and have generated employment opportunities. Today the telecom services are accessible to more than 78% of Pakistani population at very affordable prices. Almost every fifth Pakistani has a fixed or a mobile phone. The overall teledensity in the country has crossed 26.19% in June 2006 showing a growth of 120% over the last year. This increase came mostly from a high growth in mobile penetration. Fixed line sector could not show significant performance and the growth in fixed line subscribers remained stagnant during the year. Slow growth in fixed line is mostly attributed to its substitution with the competitive mobile services because of their low prices, inherent mobility, bundled offers and value added services. WLL phones are also seen to be expanding in the country due to their convenience, lower cost and value added features of the technology. In comparison to other countries of the South Asia region, Pakistan has fairly high penetration of telecom services despite the fact that some other countries like India opened their telecom markets much earlier than Pakistan.

Figure - 1
Teledensity

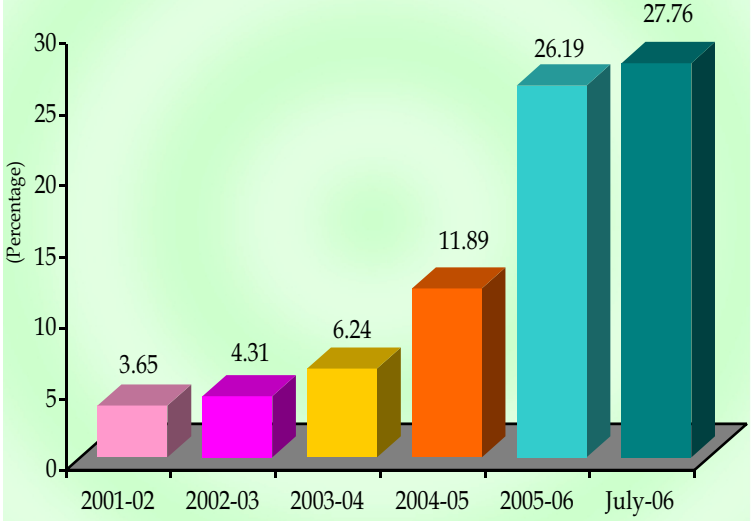


Table - 2
Teledensities of Regional Countries (%)

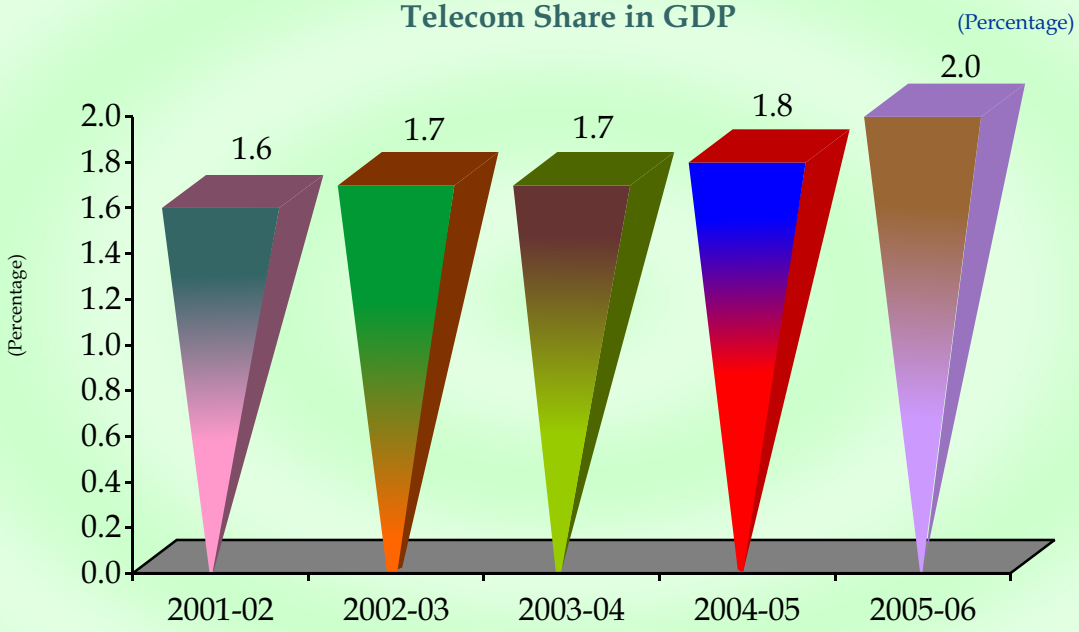
	2002-03	2003-04	2004-05	2005-06
Pakistan	**4.3**	**6.3**	**11.9**	**26.2**
Sri Lanka	12.2	16.6	23.4	27.0
India	7.1	8.9	11.5	12.8
Bangladesh	1.6	2.0	4.5	9.0
Nepal	1.8	2.0	3.0	3.5

Teledensity includes fixed, WLL and mobile
Source: Websites of Telecom Regulatory Authorities

Share of Telecom in GDP

Gross Domestic Product (GDP) of a country is calculated as a sum of value addition in various sectors of the economy. There are two major categories of these sectors: Commodity producing sector and Services sector. Telecom comes under the services sector and its share in services sector has increased from 3.1% in 2000-01 to 3.8% in 2005-06. In the overall GDP, the share of telecom has reached 2% in 2005-06, having increased from 1.6% in 2001-02. The year-wise share can be seen in the Figure - 2. In nominal terms, there has been an increase of 29.2% in the gross value addition of telecom sector during 2005-06 whereas this was 11% during 2002-03. This rise reflects the increased investment and expansion of services in the telecom sector.

Figure - 2
Telecom Share in GDP



Employment Opportunities

Entrance of new companies and expansion of existing ones in the telecom sector created sizeable employment opportunities in the country, both direct and indirect. There are several linkages in the value chain of the sector through which the sectoral growth has multiplying effect on the employment generation. Franchises, sales & promotion, cell sites, civil works for the infrastructure, sale of mobile/phone sets and accessories, manufacturing of telecom equipment and other support services are some of those key areas where a lot of jobs were created. During the year, almost 183,063 additional direct & indirect jobs were created in the telecom sector.

Table - 3
Investment and Employment in Telecom Sector

Service	Investment (US$ million) 2004-05	2005-06	Employment Generation during 2005-06
Cellular Mobile	1,315	1,327	26,642
Fixed Line	569	811	36,163
Value Added	-	-	82,211
Selling outlets and manufacturers	-	-	38,047
Total	**1,884**	**2,138**	**183,063**

Note: - Not available

Investment

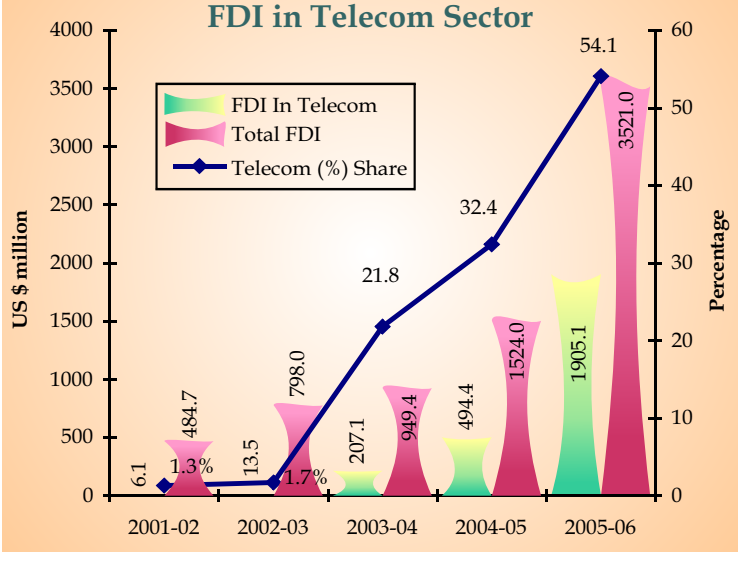
Investment in telecommunications infrastructure and the consequent improvement in telecommunication services have borne positive spill over effects over the country's economy. Increase in investment intensity in telecom related technologies is producing positive impact, stronger than the one exerted by general investment intensity. In the fully liberalized and deregulated telecom environment of Pakistan, companies are finding it more attractive to expand their network as well as customer base through enhanced services.

As a result, handsome investments were made in the sector as shown in the Table - 3 . During 2005-06, investment grew by 13.5% in the overall telecom sector. New mobile and LDI operators are investing heavily in their infrastructure and network expansion.

Foreign Direct Investment

FDI in telecom leads to revenue generation, employment, skills transfer, infrastructure development, introduction of modern technologies and better services. In line with the Government's policy to attract foreign investment, PTA has all along adopted liberal and transparent telecom policies and has been providing a level playing field to the foreign as well as the local investors. As a result, over the last 2-3 years telecom sector has attracted record inflows of FDI. During 2005-06, telecom sector received over US$ 1.9 billion FDI and emerged as the only sector of the economy to attract such a huge investment. This year, telecom sector received 54.1% of the total FDI which is even higher than last year's 32.4%. Privatization proceeds of PTCL (US$ 1,184 million) and network expansion of other telecom companies led to these large FDI flows in telecom. Telenor, Warid and Ufone were the major companies to make FDI in the telecom infrastructure.

Figure - 3
FDI in Telecom Sector



Taxes on Telecom Sector

Telecom sector is contributing significantly to national exchequer through taxes and other regulatory charges. Regulator is making constant efforts in further reducing the burden of taxes and duties which is indirectly effecting growth.

Contribution to National Exchequer

The telecom sector contributes significantly to the Government revenues. Rs. 77.1 billion were collected from the telecom sector during 2005-06 which is 15% higher than last year. Since liberalization in 2003-04, this amount has grown over 100%. These collections include GST/CED, activation tax, custom duties, income tax, withholding tax and PTA deposits. During 2005-06, domestic sales tax collection from the telecom sector remained at Rs. 26.8 billion showing a growth of 31% over the last year. During the last two years, the share of telecom sector in the total domestic sales tax collection has also increased from 8.4% to 17.6%. Company-wise analysis shows that Mobilink has emerged as the main contributor (39%) to the total sales tax from telecom sector. Similarly, collections from new comers in the telecom sector like Warid, Telenor and LDIs are also increasing in relation to the enhancement of their services.

Table - 4
Total Telecom Contribution to National Exchequer

(Rs. Million)

	PTA Deposits	Activation Tax	GST/CED	Income Tax	Custom Duty	Total
2001-02	38	1,200	8,810			10,048
2002-03	470	1,910	11,526	15,573	147	29,626
2003-04	694	4,020	12,119	21,009	555	38,397
2004-05	17,725	7,577	20,397	19,799	1,627	67,125
2005-06	17,384	11,398	26,770	20,854	696	77,102

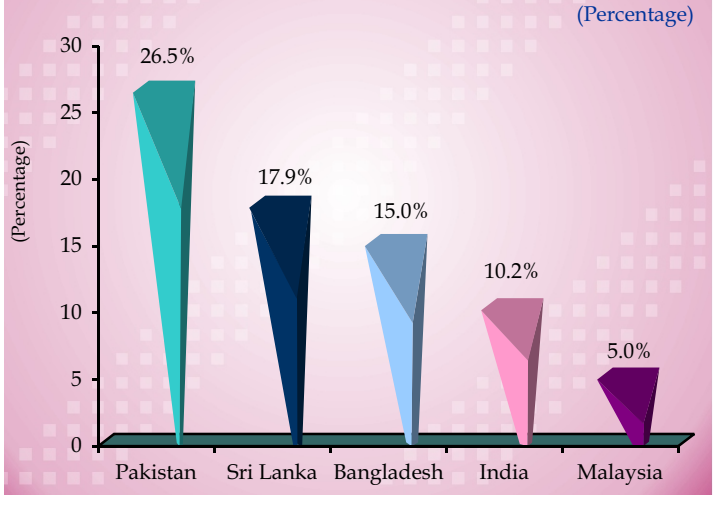
Note: PTA deposited 1.9 billion in June 06 and another Rs. 6.4 billion will be deposited shortly. Income tax for 2005 - 06 are estimated
Source: Central Board of Revenue and PTA

Tax Analysis

While analyzing the tax rates of the telecom sector of the regional countries, it can be safely determined that the corporate taxes including General Sales Tax (GST) and Withholding Tax are considerably higher in Pakistan than most of the countries in the region. Besides activation tax of Rs. 500/ per connection, Cellular Mobile sector is contributing about 30% of their revenues to the government exchequer in terms of taxes and other charges. Comparison of the sales tax and withholding tax on mobile sector in Pakistan with regional countries, shows that Pakistan's mobile sector is paying about 16.3 percentage points higher taxes than India, 8.6 percentage points higher than Sri Lanka and 21.5 percentage points higher than Malaysia.

Figure - 4
Taxes on Telecom by Countries

(Percentage)



Realizing the impact of heavier tax burden on the telecom companies PTA has urged the tax authorities to reduce the tax rates on telecom sector, which would help further growth of the sector. The share of telecom-taxes in CBR revenues was around 33% during 2003-04 and 2004-05. However, this ratio got disturbed in 2005-06 indicating inadequate tax collection. The government (CBR) can increase its overall revenue from the telecom sector by giving some tax break to the telecom companies, which would lead to an increase in the number of subscribers.

Table - 5
Telecom Tax Ratios (%)

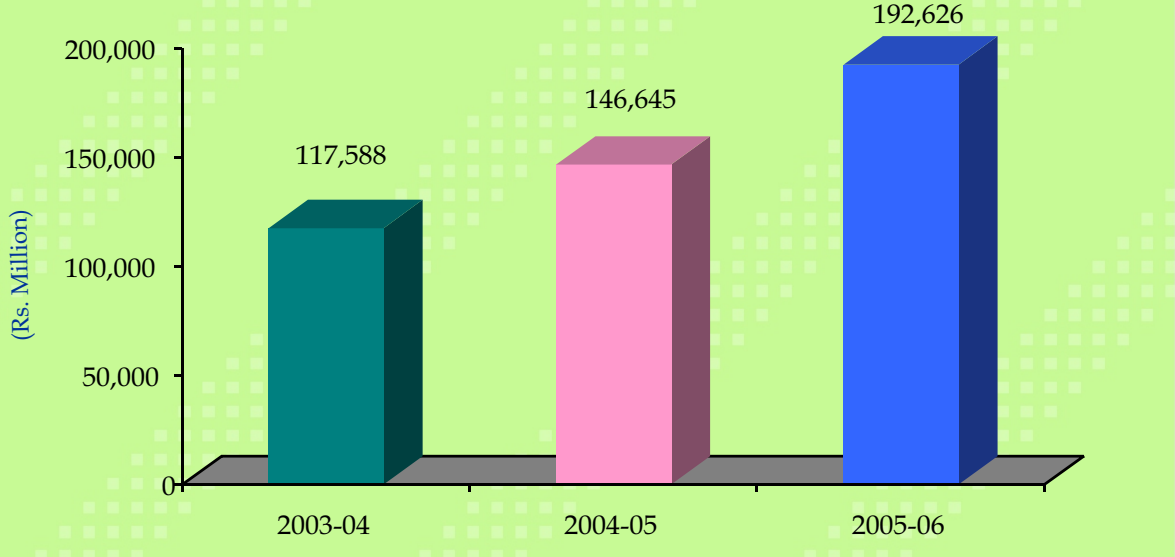
	Tele Tax/ Total CBR Taxes	Tele Tax/GDP	Tele Tax/ Telecom Revenues
2003-04	7.3	0.7	32.1
2004-05	8.4	0.8	33.7
2005-06	8.4	0.8	30.8

Telecom Revenues

With the opening up of telecom markets to private investor and consequent growth in the sector, the telecom companies' revenues have increased substantially. The revenues of mobile sector grew considerably. However, the revenues of fixed line slightly dropped in 2005-06. Overall revenues of the telecom sector showed a robust growth of 31% during 2005-06 against 25% from last year.

Despite the substantial reduction in tariffs and ARPUs, mobile companies strived to increase their revenues and customers through lucrative combo offers and value added services. During 2005-06, a growth of 84% was witnessed in the total mobile revenues which are even higher than last year's 76%. Mobilink has a share of more than 60% of the total mobile revenues, whereas other companies are trying hard to increase their share. PTCL, NTC and SCO experienced drop in their revenues as some of their revenues were taken away by the new operators. After the privatization of PTCL and its management control going to Etisalat, it is hoped that the company will design such business strategies so as to pave the way for the company's revenue generation and expansion of its network and services. (Annex - 4)

Figure - 5
Total Telecom Revenues



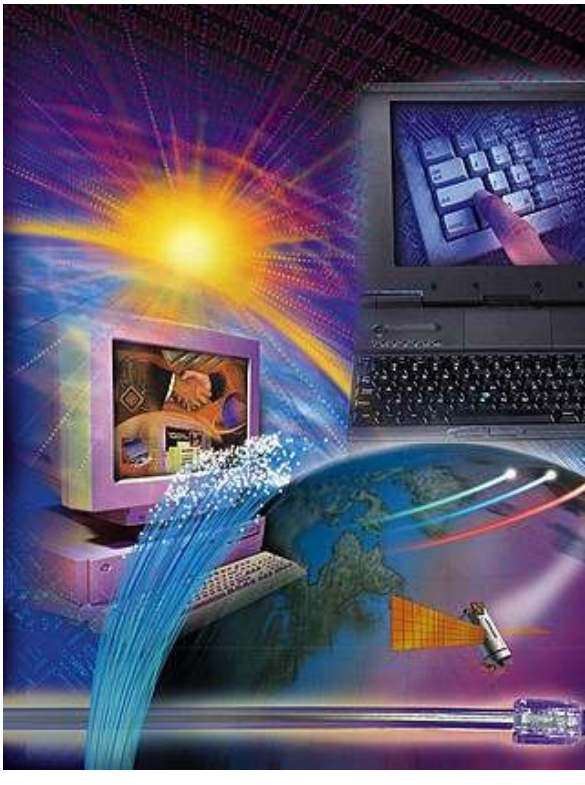
Note: PTCL Data for the year 2005-06 is estimated based on 9 months data while NTC data is estimated based on average of last two years

Market Potential in Pakistan

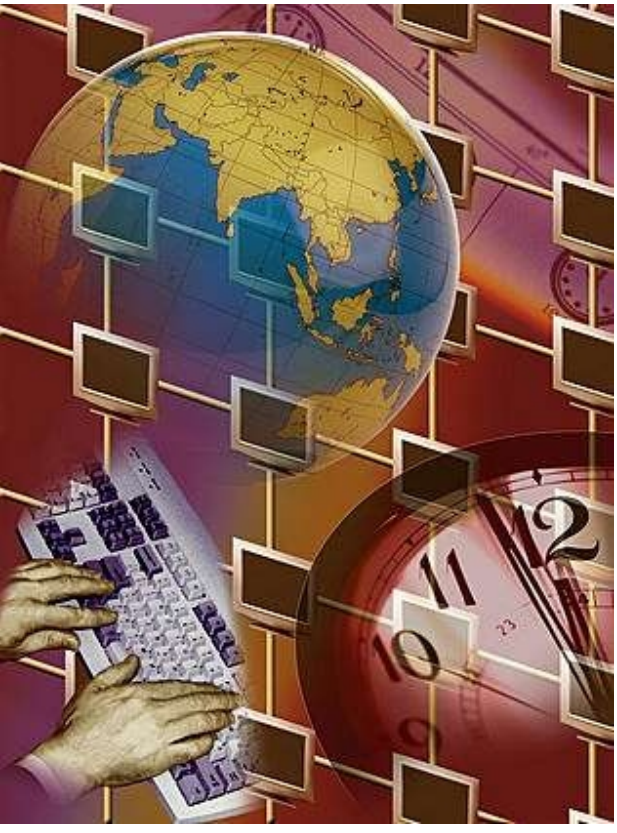
Pakistan is a developing country and market potential can be reviewed from its demographic and economic standing. Currently, there are more than 40 million mobile and fixed subscribers which are almost 26% of the total population. In recent years, telecom subscribers exhibited tremendous growth especially in cellular mobile sector that has left many analysts wonder with awe as the trend seems to reflect an enhanced standard of living or perhaps

increase in the purchasing power of the common man who now carries a cell phone. Currently we have a population of over 155 million and if we exclude approximately 20% poor population and 30% children (population below the age of ten years), we get a potential target market of about 87 million people . It is however widely argued that poor are more inclined to avail telecom facility which in turn increases their income while reduces their business input costs, and in that case potential target market increases to more than 87 million people. So far cellular mobile companies have grabbed only 34.5 million subscribers, which is only 39% of the potential target market. Similarly the Fixed Line operators have covered only 6% of the potential population. As about 59% of the potential population in Pakistan is living in rural areas, the scenario provides a huge market potential to WLL operators. Hence, there exists a promising scenario for the existing and new telecom entrants which get more reinforced with further expansion in the national economy.

Besides population, economic strength is another barometer to gauge the potential of telecom market in Pakistan. In the last few years, Pakistan's economy has been rated among the few fastest growing economies in the region and having comfortable position in foreign exchange reserves. This year our economy grew by 6.6%, next year it is expected to be grown by 7%. Per Capita Income of Pakistan was US$ 847 in 2005-06 and it is expected that next year it will reach US$ 935 which, will increase the disposable income of people for more spending on telecom services amongst various others. Specifically, a higher per capita income enables the consumers to buy a variety of products such as cellular phones thus indicating much economic potential in the economy of Pakistan. It is expected that next year telecom companies would be able to achieve 2.5% share in GDP instead of 2% in the current year and it would add about US$ 3 billion in the value addition of telecom sector in 2006-07. Government is taking concrete steps to reduce poverty and unemployment and controlling inflation. Thus higher economic growth coupled with substantial FDI in the Telecommunication sector and declining unemployment will result in increasing the use of telephone network in Pakistan.



2 Regulatory Measures By PTA



Introduction

With the fast paced growth trends being witnessed in every domain of the telecom sector over the recent years and resultant emergence of new entrants in the telecom sector, which lately created a highly competitive market scenario gave rise to a number of regulatory challenges. These challenges led the Authority to play its due role as an impartial regulator with an eye towards bringing about such determinations that would not only supplement the overall well being of the sector but also provide a level playing field to all the operators. The Authority came up with landmark regulatory measures while inviting expertise of stakeholders and taking their view point into consideration. These measures have made Pakistan's telecom sector more modern, efficient and growth oriented. Ensuing pages give brief description of the steps and decisions of PTA during the last year. These include decisions on licensing, consumer protection, various determinations and other regulatory issues.

Licensing

In a landmark decision Government decided to open the telecom sector of Azad Jammu & Kashmir (AJ&K) and Northern Areas (NAs) of Paksitan to private operators thus heralding the deregulation of the telecom sector in these areas. Prior to the decision of allowing private operators to begin their

services in Azad Jammu & Kashmir region, Special Communication Organization (SCO) had been exclusively providing telecommunication services in the entire area since 1976.

Telecom Licensing in AJ&K and NAs

In line with the Act 1, 2005 passed by the AJ&K council regarding the enforcement of the Pakistan Telecom (Reorganization) Act 1996 in Azad Jammu & Kashmir, PTA had been assigned the task to implement the Government's decision to deregulate the telecom sector in AJ&K.

With a population of 4.5 million and a teledensity figure of 3.88% and 1.83 % in AJ&K and NAs respectively, the Authority strongly believes that broadening the circle of telecom deregulation to AJ&K was the need of the hour.

In the wake of the disastrous natural calamity that struck our Kashmiri brethren inflicting unimaginable loss to the area's infrastructure including the telecommunications networks, opening up the area to private sector was the need of the hour. The emerging needs of rehabilitation and reconstruction phase in the quake affected areas also bespeak of the necessity of establishment of swift communications inflow and large investments in the telecom sector. Under special permission by the Authority, all cellular mobile companies were temporarily

permitted to begin their services in the quake affected areas with an aim to help coordinate rescue and relief efforts there. The rationale for allowing the telecom operators to begin their services in the AJ&K was to assist in the rehabilitation and reconstruction phase in the quake-affected areas besides the provision of smooth flow of telecommunication facilities in the region.

During the first phase of this deregulation process, Authority invited all existing Cellular mobile operators for the grant of license for continuation of telecom services in the region on permanent basis. PTA fixed US$ 10 million for grant of a cellular mobile license for AJ&K and NAs of which 50% was to be deposited as initial license fee at the time of submitting applications.

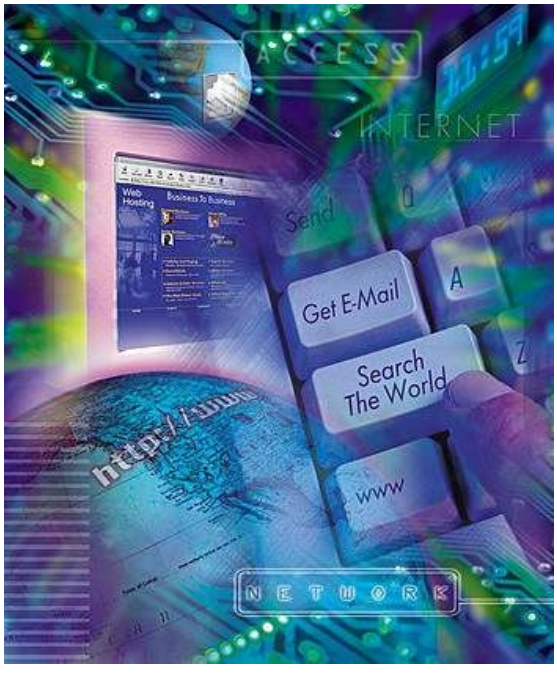
Meeting the requirements, four mobile operators Mobilink, Warid Telecom, Telenor Pakistan and Ufone deposited Rs 1.2 billion in aggregate as initial license fee. On June 26th 2006, in a historic ceremony in Islamabad organized by PTA, award of cellular mobile licenses took place with Honourable Prime Minister of AJ&K Sardar Sikander Hayat Khan as the chief guest. All the successful licensees expressed their commitment towards the efficient and affordable provision of telecom services to the people of AJ&K and NAs.

The award of mobile licenses to four operators is the first significant step towards the liberalization of the telecom sector in the region bringing it at par with the rest of the country. The people of Azad Kashmir and Northern Areas would very soon have more choice of telecom services, enhanced network coverage and improved quality of services thus achieving their long standing demand. Soon this process would be broadened to other domains of the sector including fixed, WLL, Value added services besides encouraging the availability of internet facilities in the area. The Authority is working hard towards the step by step implementation of the deregulation phase in the area.

Class Value Added License (CVAL) Regime

Analysts believed that the scope and spread of Broadband would not increase until and unless the regulator paved way for simplification of Value Added Services (VAS) license regime where licensee can offer bundled services under a single umbrella. Cognizant of this need, PTA introduced CVAL regime in Pakistan in 2005-06 whereby more than 15 value added services were merged into two license categories, data and voice. Since the introduction of CAVLs, 56 new CVAL have been issued by PTA and 71 existing value added licenses have been converted to CAVLs. The main highlights of CVALs are:

- A 'Data' CVAS provider may offer any one or more service types allowed to its customers e.g. Multimedia, Burglar Alarm, Vehicle Tracking, Video Conferencing, Data Service, Internet Service, Internet Cards (for data only) and Virtual Private Network services or as added by the Authority from time to time.
- A 'Voice' CVAS provider may offer any one or more service types allowed e.g. Payphone, Trunk Radio and Premium Rate Services or as added by the Authority from time to time.
- CVAS licenses shall be valid for a period of fifteen (15) years. The Initial License Fee (ILF) is Rs.100, 000 per province, with a further 50% reduction for Balochistan and non-profit organizations while the ILF for nationwide CVALS is Rs. 300,000 only.
- A new regime of Class Value Added Registration Services (CVARS) has been introduced for some applications and services e.g. Voice Mail, SMS, Interconnect Bill Clearing House, Store & Forward Fax, Content Service Provider, Teletext etc. More may be added by the Authority from time to time. CVARS applicants have to only pay Rs. 10,000 as processing fee, and there is no Initial License Fee (ILF) or annual fee for the period of the registration. Registration is valid for a period of five (5) years only. At the expiry of the registration a fresh registration will be required.



- In the new licensing regime, incentives have been given to the existing Value Added Services Licensees. They can role over to the new regime after fulfilling the simple formalities without paying any amount.
- Regulations for CVALS have been developed and the Authority intends to approve and notify them by the end of 2006.

Infrastructure License

In view of the unprecedented developments seen in the telecom sector, huge market potential attracting the operators and demand for enhancing and broadening the networks of their telecom services amidst stiff competition to grab the newly emerging market shares in un served areas, it was being observed that infrastructure development in the field of telecommunications was the need of the hour. Coupled with this scenario it has been the realization that the operators in the interest of their network expansion would to some extent hesitate to invest huge amount of money towards the laying of infrastructure rather than strategizing the same capital on their roll out plans. To promote infrastructure development, the Authority introduced separate infrastructure license for further growth of the sector. Infrastructure licensees will build their own infrastructure and may give on rent or lease it to all telecom operators. It would help the telecom companies to cover the outreach areas in a relatively short span of time thereby reducing the cost of laying their own infrastructure.

The process of Infrastructure and Telecommunication Tower licensing has been successfully commenced and three Telecommunication Tower licenses have already been issued to eligible parties. PTA has also prepared comprehensive documents for infrastructure licensees wherein comments and suggestions of all the stakeholders have been incorporated.

Cellular Mobile Sector

The cellular sector has done exceptionally well in 2005 - 06. The current growth in subscribers and teledensity has been the highest in the history of the cellular sector. The cellular subscribers now stand at 36.8 million and the mobile density has gone up to 23.7%. Some of the major issues/challenges of cellular segment are given below:

Mobile Number Portability (MNP)

MNP enables the customer to change his or her mobile operator/service provider while retaining the same mobile number. This creates competition in the market, improves services and provides an option of better range of choices for those dissatisfied with the quality of service of their service provider but do not want to change their mobile contact numbers.

PTA has been making concerted efforts for implementation of MNP and in this regard a strategy roadmap was developed by PTA. Under this roadmap, with consultation from all the stakeholders, PTA prepared regulations for MNP. These regulations were finalized and gazette notified on 3rd August 2005.

Facilitating the industry, an MNP supervisory board comprising of Chief Executives of all CMT operators and a PTA

representative was formed in 2005. Mr. Tore Johnson, CEO of Telenor Pakistan was elected as the Chairman of the MNP Supervisory Board. A company by the name of Pakistan Mobile Number Portability Database (Guarantee) Limited (PMD) was also established in October, 2005. The company would look after central data base requirements. Meanwhile PTA directed all concerned operators to upgrade their switches in terms of hardware and software for implementation of MNP. All cellular operators will meet funding requirements of the central database company equally.

Comprehensive work has already been done in this regard and the Authority is determined to implement it by October 2006, Pakistan would be the first country in the region to successfully implement MNP.

Mobile Handset Theft

During the last few years, the Mobile Handset Theft has become a curse in the society and increasing number of cases for snatching and stealing mobile handsets are being reported. The menace is most noticeable in the country's metropolitan city of Karachi. In order to check this menace, the government has come up with a principal decision to initiate process on implementation of a Central Equipment Identification Register based on International Mobile Equipment Identity System (IMEI). The customers are already availing the facility to block their SIM numbers in case of a theft of their mobile phones. The aim is to introduce the technology that would disable the use of mobile set once it has been reported as stolen. The idea is to register the identification/serial number of each sold mobile set and to disable/block use of any SIM on that particular mobile set on the request of the customer in case it is stolen. As the problem is more severe in Karachi, PTA is already working with electronic dealers association, police and other law enforcement agencies to overcome this menace. Implementation of this system has already resulted in a considerable drop in the cases of mobile handset theft in the city.

The Authority has already initiated work on implementing IMEI country wide and has asked all the mobile operators to make available necessary requirements on their switches. To make the procedures and systems more effective, PTA is forming the regulations for blocking the stolen mobile handsets. In this regard, a national database will be formed. When these arrangements will be completed, the complaints of the stolen mobile handset will be reported with cellular mobile company. After authentication of the complainants and the IMEIs, the database would be updated and the stolen handsets will be blocked.

Use of Jammers & Disabling Devices

It has been observed by the Authority that unauthorised use of jammers and jamming devices for cellular mobile operations has been causing interference in the services, reduction in quality of service and a lot of in convenience to mobile users. Cognizant of the fact, the Authority has been focusing on removing all hurdles in the smooth flow of mobile services to people.

In this regard a public notice was issued in the press warning the suppliers, installers as well as the users of the jamming devices that are causing interference in the licensed telecom networks to remove all such devices. Instructions have been issued to State Bank of Pakistan and licensed importers of such devices to also remove all unauthorized jammers. Only downlink type approved jammers are allowed by PTA.

CBR has also been asked to confiscate all such jamming devices as their import has been termed illegal. A joint survey of bank branches by PTA Enforcement wing, representatives of mobile operators and FAB is also being considered to assess the situation.

The Ministry of IT & T issued policy on "use of jammers and disabler devices for blocking cellular communication and related services" on 1st August 2006. PTA has been directed to implement the policy directives.

Consumer Safeguard

With the deregulation a number of new players entered the telecom market who paid heavy fees for their licenses and invested huge amounts in their infrastructure. However, the latent demand was so huge that most cellular operators got millions of new customers which put heavy load on their networks. To maintain that customer base operators have to maintain their quality of service by investing further in their infrastructure to provide good quality telecom services at affordable prices.

The Authority developed defined standards of service and plans to enforce them against the offered quality of service whenever required. For this purpose the Authority proceeds methodologically while setting up internal capabilities for ensuring standard services to the telecom customers. Following is brief on Authority's activities for ensuring quality telecom services in the market.

Complaint Analysis

Complaint cell forms an integral part of PTA as it is responsible for addressing the consumer complaints against all telecom service providers. The complaints lodged in the cell are utilized by the Authority to regularly review the issues raised through this mechanism and initiate necessary actions for the rectification of the

Table - 6
Public Complaints for the Year 2005-06

Service Provider	No. of Complaints
Fixed Telephony	11,311
LDI	49
WLL	205
Cellular	2,084
Card Pay Phone	242
Internet Service Provider	106
Total	13,997

problems faced by the telecom users.

In 2005-06, PTA's complaint cell received and disposed 13,997 complaints as compared to the last year's figure of 9,942 from telecom customers across the country.

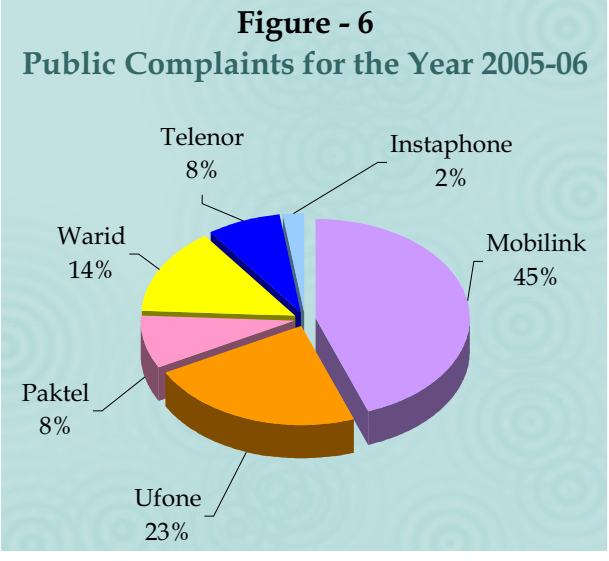
Fixed Telephony

In the fixed line segment, 99% of the total complaints were received against PTCL which has 96% share in the market. Major complaints against PTCL were about faulty telephones and ill-response of PTCL hotline. Similarly complaints were received against PTCL for not meeting the demand for new connections and excessive billing. In addition many cases of malfunctioning of remote area exchanges due to cable faults were reported. Directory assistance of PTCL has also been criticized by PTCL's customers at large. Many cases were reported against obnoxious calls being received from various PCO numbers.

Cellular Mobile

15% of the total complaints received to the Authority were made against mobile operators. The breakdown by cellular operators is given in the pie chart. When compared with last year, the percentage changes in the complaints against all of the operators have increased with the exception of Mobilink whose complaints decreased from 61% in 2005 to 45 % in 2006. This change is mainly due to the increase in number of subscribers of every company and decrease in market share of Mobilink. Furthermore, most of the cellular complaints were registered for connectivity issues, poor quality of service, distortions and delayed response by help line services. In addition numbers of cases were reported for mobile handset theft and excessive billing by the mobile operators.

Figure - 6
Public Complaints for the Year 2005-06



Other Services

Other services include WLL/LDI, card payphones and value added services which accounted for a minimal share of 4.3% of total complaints. WLL subscribers mainly registered complaints for poor Internet connectivity, poor quality of service, misleading advertisements and wrong billing. Complaints received against LDIs mainly revolved around poor connectivity, which was mainly due to excessive sale of calling cards by the companies.

Quality of Service Surveys & Inspections

In 2005-06 a total of 1,582 complaints were received and dealt with 1,168 inspections were carried out. 43 hearings were held at PTA zonal offices and 9 raids were conducted. PTA also imposed 296 fines on card payphone operators on violation of license terms. 697 inspections were carried out for checking tariffs of PCOs. Details of investigations carried out during the year are given at Annex - 5.

Mobile Cellular Services

Special Quality of Service surveys of cellular mobile operators were conducted by PTA Zonal offices of Peshawar, Lahore, Karachi, Quetta and Rawalpindi. Service quality of all mobile operators was surveyed in their acclaimed areas of coverage respectively. Most of the survey results were satisfactory. However, Zonal Office Peshawar carried out QoS Survey of Mobilink, Ufone, Paktel at Mingora during November 2005 and services of all three mentioned operators were found below license standards.

A joint survey with CMT Operators was carried out on the issue of installation of jammers. Considerable interference was observed with number of banks. The banks were, therefore, requested to switch off the jammers for smooth services in those areas.

Internet Service Providers

A Quality of Service (QoS) survey of the Internet Service Providers (ISPs) operating in 50 cities across the country was also carried out during April - May 2006. The results of the survey (as given in Table - 7) revealed that 45% of the country's ISPs were fulfilling the quality of service parameters and performing well, while 35% ISPs depicted average performance in their services. The quality of service of 20% ISPs was not up to the required standards.

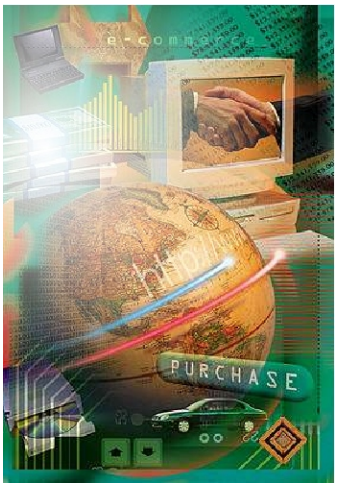
Table - 7
Zone wise Performance of ISPs in Survey

Zone	Good	Average	Poor
Punjab	51%	28%	21%
Sindh	33%	47%	20%
Central	41%	36%	23%
NWFP	33%	43%	24%
Balochistan	70%	18%	12%

Based on the above results, the Authority gave one month's time to all the operators showing an average performance index to bring their services to the stipulated quality benchmarks. Similarly the operators with poor QoS were issued a show cause notice under the provisions of Pakistan Telecom Act. PTA also issued press releases in national media and results were announced for information of general public. Results are also placed on PTA's website.

The Province wise results of the survey are given at Annex - 6.

Illegal Telecom Traffic (Grey Traffic)



Traditionally illegal telecom traffic usually termed as "Grey Traffic" is the bypass of legal gateways of a country with a view to avoid government levies like license fees, taxes and other applicable charges. The key reason of such practices has been non cost-based settlement rates and resultant financial incentive. Like many other developing countries, it is a big issue in Pakistan also. It not only affects rightful revenues of licensed operators but also incurs huge losses to government exchequer. According to an estimate, illegal termination has caused a revenue loss of approximately Rs. 3 billion during last year.

Before deregulation of the telecom industry, it was the incumbent who suffered from revenue losses. PTCL had its own arrangement in the form of Network Surveillance & Security (NSS) region which worked effectively as per their scope of operations. After deregulation, several players were granted license for terminating/originating international traffic thus increasing bypass possibilities. Advancement in technology also paved the way for larger volumes of grey traffic.

Initiatives taken by PTA

PTA has taken several steps to curb the menace of illegal telecom traffic. These include regulatory as well as technical measures. Following is a brief rundown on initiatives and progress of Authority in reducing grey traffic in the country:

a. Establishment of Vigilance Cell in PTA in July 2005 which exclusively deals with the issues of grey market telephony

b. Reduction in Accounting Settlement Rates (ASR) by 38.6% during last one year. High settlement rates provide incentive to illegal operators to bypass legal gateways.

c. Development of CDR analysis capability wherein data received from operators is analyzed for misreporting / concealment of traffic. PTA established a cell for this purpose called CDR Management & Analysis (CMA).

d. Issuance of Policy Guidelines to telecom operators, enabling them to evolve their procedures for arresting the menace at their own level.

e. Evaluation of technical solutions for automated detection and hence elimination of grey telephony.

f. Conducting raids against illegal operators thereby saving Rs.650 million during last one year. A total of 22 raids were conducted by PTA apprehending several illegal operators. 17 such operators were arrested while 36 VoIP gateways along-with associated equipment were confiscated. It is important to note that 478 GSM SIMs and 161 WLL sets were also recovered during the raids indicating change in trend from fixed to mobile in terms of local termination.

g. Reconstitution of Vigilance Committee by Ministry of IT & Telecom, Chairman PTA selected as Convener of the committee.

PTA is fully committed towards the cause of eradication of grey telephony. In this regard the Regulator also plans to acquire state of the art technical facilities with an aim to develop the capability for locating suspected mobile SIMs, launching of media campaign for consumer awareness and increasing frequency of raids, etc. Grey traffic is the problem of the entire telecom industry and joint efforts are required from all stake-holders to root out this menace from the country.

Commercial and Legal Measures

In an increasingly competitive environment with the race to grab the upcoming market shares by all the telecom operators, the Authority aims at making sure that the services are not anti-competive and do not disturb the level playing field so that they don't make the operations of other operators commercially un-viable.

Determinations

During the year PTA issued determinations on interconnections both for fixedline and cellular mobile services. The Authority also took special regulatory measures for decreasing the international settlement rates and worked on USF collection.

Fixed-to-Mobile and Mobile-to-Mobile Interconnection Charges

As per the Mobile Policy, PTA was required to decide the mobile termination rates before the end of 2004 based upon its view of termination costs by existing operators. Four mobile operators were requested to work out their cost-based MTR on Fully Allocated Cost (FAC) basis. Due to adoption of different costing methodologies by each operator and non-provision of cost models to PTA, the operators were provided with the guiding principles and costing methodologies for calculation of cost-based MTR, so that same basis can be applied by all operators for uniformity purpose.

Keeping in view all the conditions, the Authority finally reduced the MTR from Rs. 2/minute to Rs. 1.60/minute from 1st August 2005 to 30th June 2006, vide its determination dated 7th July 2005. From 1st July 2006 to 30th June 2007, MTR has been determined to be Rs. 1.25/minute. The fixed termination rate for calls terminated on fixed networks from mobile networks has been set at Rs. 0.52 per minute. This charge is effective from 1st August 2005 and shall remain in full force till revised by the Authority. These charges are accounted for and settled on per minute basis from 1st August 2005 to 30th June 2006, with the exception of international incoming traffic which shall continue to be accounted for and settled on per second basis. From 1st July 2006 onwards, the settlement of interconnection traffic is done on per second basis for all types of calls (local, long distance and international) whether terminating on fixed networks or mobile networks.

Discriminatory Mobile On-net and Off-net Tariffs

Mobilink, the SMP operator announced its tariffs without prior approval of the Authority. As a result, other Cellular mobile operators requested the Authority to stop Mobilink from charging discriminatory tariffs as it would result in discouraging Mobilink's customers to make off-net calls to other networks and would affect their revenues from incoming calls. Mobilink was directed by the Authority not to charge off-net tariffs in excess of on net tariff plus the termination rates. However, after several discussions Mobilink continued charging discriminatory tariffs.

After analyzing the issue with the operators, taking into consideration the hearings, the Act and Mobile Policy, the Authority determined the following:

- The SMP operator (Mobilink) shall not unduly discriminate the on-net and off-net calls and shall not charge additional tariffs for off-net calls in excess of the 'termination charges' of the called network.
- The SMP operator shall apply the same charging mechanism (in terms of time duration) for on-net and off-net calls.
- This determination shall be applicable on all packages (existing as well as forthcoming) of SMP operator.
- Mobilink shall make necessary revisions in its tariffs in compliance with this Determination, within ten (10) calendar days of this Determination and confirm compliance.
- Mobilink has not implemented PTA's determination yet.

Other Determinations issued by the Authority

The Authority issued determination to number of telecom companies during the reported period for violation of license conditions. The cases against which these determinations were issued included sales of shares and change in management of the company without prior approval of the Authority, provision of services without obtaining license from the authority, illegal voice termination, discriminatory attitude of incumbent PTCL and unjustified tariffs. The companies involved in such cases were also fined accordingly starting from Rs. 15,000 to Rs. 500,000.

Reference Interconnect Offers (RIOs)

As a regulator of the industry, PTA has a due role to play in terms of deciding upon the interconnection services to telecom operators from the SMPs of their respective domains. In this regard the Authority after taking into account the viewpoints of all stakeholders of the industry and thorough deliberations has approved the RIO of both PTCL as well as Mobilink.

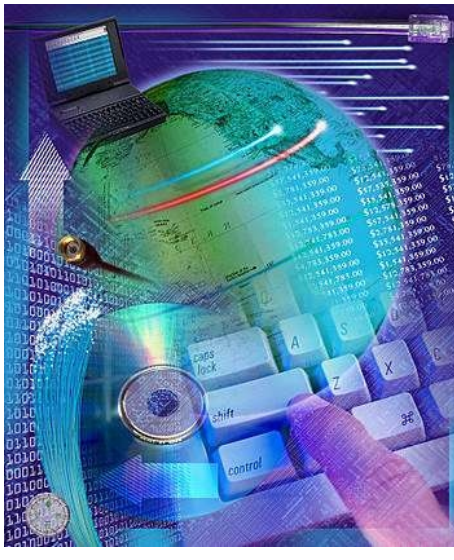
PTCL RIO for Mobile Operators

The Authority approved the PTCL RIO for fixed-line operators in May 2005. In order to provide interconnection services to mobile operators on standard terms and conditions and in meeting its obligations under the Interconnection Guidelines and Mobile Policy, PTCL submitted its RIO for Cellular Mobile Operators (CMOs) to the Authority in June 2005 for approval. The 'PTCL RIO for CMOs' contained two new Schedules (GSM International Roaming and Short Message Services) and other necessary modifications so as to meet the service requirements of mobile operators. PTA reviewed the draft RIO and also circulated the RIO to all mobile operators for their review and comments.

A number of meetings were held, the situation was thoroughly analyzed and deliberations were made with the industry. The Authority finally approved PTCL RIO for CMOs in March 2006.

Mobilink RIO

In accordance with the provisions of the Interconnection Guidelines and Mobile Policy, Mobilink submitted its draft Reference Interconnection Offer (RIO) to the Authority for approval. The draft RIO was reviewed internally and also placed on PTA's website for public consultation. Based on discussions with stakeholders, Mobilink submitted its revised RIO on 18th August 2005 to the Authority. The Authority reviewed the revised RIO and necessary modifications in the document were incorporated keeping in view the deliberations with the operators, PTCL's RIO and best international practices. The amended RIO of Mobilink was approved by the Authority in July 2006.



Settlement Rates and APC

The settlement rates of Pakistan are regulated by the Authority periodically in line with the international trends, the likely impact on various stakeholders (particularly on LL and LDI operators) and other relevant factors. For this purpose, detailed analyses were carried out comprising financial impact of previous reduction in TARs, various scenarios for the future settlement rates and the prevailing settlement rates of the LDI licensees etc. The consultative sessions were also held with the key stakeholders of the AP regime.

Based on the findings/results of the aforementioned factors, a reduction of 5% was made in the settlement rates with effect from January 01, 2006 by bringing them down to a level of US Cents 12.83 per minute (comprising APC of US Cents 6.83 and LDI share of US Cents 6 per minute). To align this reduction in settlement rates with the international market trends, it was further decided by the Authority that the settlement rate for all countries shall be US cents 12.83 per minute.

The reduction of 5% made by the Authority was effective till June 2006. Thereafter it was decided that further reduction be made in the rates so that the rates are aligned with the international market while at the same time termination of illegal international traffic is discouraged within Pakistan. Accordingly, the rates have been reduced to US Cents 10 per minute (both APC for USF and LDI share have been fixed at US Cents 5 per minute).

In Service of Nation

Earthquake Relief Efforts

In the aftermath of the disastrous earthquake devastating the lives of our Kashmiri brethren as well as the entire infrastructure of the AJ&K areas, PTA and telecommunity of Pakistan responding to the call of the hour very promptly took several measures to ease the sufferings of the affected people and contributed in whatever way possible in the relief and rescue operations. These measures included donations, regulatory concessions, and on spot relief efforts. PTA contributed Rs. 200 million to the President's relief fund. In addition, PTA employees contributed 3 days' salary to the President's relief fund. PTA was also at the forefront in providing relief goods to the earthquake hit areas of Balakot, Muzaffarabad, Rawalakot and Bagh. In order to augment the telecom services in earthquake affected areas, 45 VHF sets were provided to army engaged in relief work in affected areas. Similarly, PTA allowed all licensed operators including cellular mobile operators to provide telecom services in AJ&K on temporary basis. NGOs working in the affected areas were allowed to use satellite phones and VSAT installations without any regulatory fees. The International Relief agencies were assigned VHF and HF frequency bands without any regulatory fees for coordination in the relief efforts.

All major telecom operators made every possible effort to contribute in the emergency rescue and relief operations. The relief packages included cash contributions as well as relief goods. In addition, the operators also provided free telecom facilities in the affected areas. More than Rs. 263 million was donated by the mobile operators collectively to the President's relief fund. Similarly the mobile operators also took other initiatives including free SIMS and handsets to the affectees, and mobile BTS installations at the affected areas. PTCL also made significant contributions and donated Rs. 30 million to President's relief fund. In addition to that PTCL also provided/restored communication facilities in the affected areas.

Telecom Forums

Pakistan Telecom Authority arranges interactive platforms for customers, operators, intelligensia and Government to interact on important issues related to the sector and services with an aim of realizing the growth potential of specific areas. The Authority arranged a series of forums in three provinces of the country during the fiscal year 2005-06.

The first forum was held in Karachi, Dr. Ishratul Ibad, Governor Sindh was the chief guest. Appreciating the rapid telecom growth in Sindh with significantly improved telecom indicators over the past few years, he observed that teledensity in Sindh is now higher than the national average and a large number of towns and rural areas have been provided with telecom facilities. PCOs have sprung-up in many villages providing much needed connectivity to the people of these villages who go to work in bigger towns and cities. During the forum, it was highlighted that certain parts of rural Sindh still require basic telephone facilities. Internet access, especially broadband services must cover more cities and towns. Representatives from telecom companies also attended the forum.

A seminar was also arranged by PTA in Lahore to address the issues related to development of telecom in Punjab. Speaking on the occasion Governor Punjab, General (R) Khalid Maqbool, expressed his gratification on the state of telecom in Punjab. However concerns were raised by speakers on state of telecom facilities in rural Punjab. Chairman PTA told the participants that expanding PTA's network to rural Punjab was a great challenge. Warid Telecom and WorldCall informed the public about their plans of expanding their services in the province. Warid telecom has created around 4,000 jobs in Punjab and an amount of Rs. 500 million was collected from Warid in the form of taxes in Punjab only. Similarly, WorldCall has also created about 2,400 direct and 50,000 indirect jobs in Punjab.

Capacity Building of Journalists

Print and electronic media play an important role to disseminate information to general public as well as in drawing a picture to the foreign investors about the state of Pakistan economy in general and telecom sector in particular. In order to improve the understanding of the members of press about the regulatory regime, issues and challenges of Pakistan's telecom sector PTA organized a National Workshop on Telecommunication Reporting for the capacity building of media personnel. The first ever national workshop on telecommunication was held from July 16 to 17 at Bhurban. Journalists from the major electronic and print media organizations participated in the workshop. Prime objective of the workshop was to enable the media men to have better understanding of status of the rapidly growing telecom sector, various issues facing the sector and future trends which would ultimately help them in fulfilling their professional assignments.

Chairman PTA Major General (R) Shahzada Alam Malik briefed the participants about the spectacular growth of telecom sector. Senior PTA officers having expertise in their domains made presentations on different topics pertaining to telecom sector including award of telecom licenses, various types of licenses, grey market telephony, Quality of Service (QoS) surveys, license enforcement, GSM, WLL, LDI operations, telecom law and regulations. Mediamen were apprised about the latest developments taking place in the telecom sector of the country and its phenomenal growth. The workshop also included a very fruitful and candid question answer session.

Assistance and Facilitation

Rural Telephony in Pakistan

The development of rural communication has been on the agenda of PTA. PTA is exploring ways and means to increase access of telecom services in rural areas that are self sustaining, cost effective and best suited to the social and environmental needs of the local community. To this end a special Rural Communication Cell has been established in the Authority with an aim to focus on this issue.

The current teledensity in rural areas of Pakistan is less than 2% whereas only 23% of the rural areas are covered with telecom facilities. To bridge this digital gap in Pakistan, PTA has taken several initiatives. The Authority is working an improving access to telecom facilities in rural areas through the establishment of Rural Telecentres which provide telecommunication facilities under one roof. These facilities would include public payphone service, fax, Internet, and printing facility to the rural population of that community. Soft lauch of the project was held in Islamabad in August 2006. PTA and UNDP have signed MoU for establishment of Telecentres in rural areas for improvement of rural telephony by helping mobilize and channelize every possible resource. Several banks have been contacted to make credit lines/micro finance available for providing loans to people in the rural areas for the establishment of PCOs & Telecentres. Under the National Bank of Pakistan's *"President's Rozgar Scheme"*, soft loans would be provided for the establishment of Telecentres in rural areas. In this regard, Zarai Taraqiati Bank Ltd (ZTBL) and First Women Bank Ltd. are also finalizing a product that will facilitate entrepreneurs in rural areas. PTA is also working with Pakistan Post to establish PCOs in post offices located in rural areas through Card Payphone (CPP) operators. In addition cellular mobile operators were requested to provide free mobile phone sets and subsidized connections to Postmen working in rural areas. The Ministry of Health has been requested to provide space in their health establishments in the rural areas for setting up PCOs and Telecentres. Similarly Ministry of Education has been requested for utilization of rural educational establishments for setting up PCOs and Telecentres for the service of communities in rural areas. The first ever Tele center has been established at Lachi NWFP on 20th April 2006. This project is a joint venture of UNDP and PTA where as the project is being financed only by PTA.

With the above initiatives taken by PTA, it is expected that the rural areas of the country would be provided with the long due telecommunication access leading to increased linkages, economic and social activities, job opportunities and flow of information in rural areas.

Universal Service Fund

The concept of Universal Service Fund was introduced in Telecom Deregulation Policy with the objective to meet the needs for basic telecommunication and ICT services in un-served and under-served areas throughout the length and breadth of the country. Prior to deregulation of telecommunication sector, the only contributor to universal services

obligation was PTCL. However, with the new licensing regime in place, all the telecom licence holders including LL, LDI and Mobile will contribute in the USF. Following is a list of expected contributions made towards USF.

- Grants made by the Federal Government and the Provincial Government
- Prescribed Contribution by licensees.
- Sale proceeds from the auction of the right to use radio spectrum.
- Loans obtained from the federal government
- Grants and endowments received from other agencies.

So far, LDI operators have deposited the revenues from incoming international traffic terminated on cellular mobile networks into the Universal Service Fund account, maintained by the Authority. During the year 2005-2006 a sum of Rs. 1.31 billion have been collected in this account. These funds will be utilized for provision of access in the underserved areas, once the USF disbursement policy is finalized.

Electronic PTA - A Step Towards Increased Regulatory Efficiency

With an aim to achieve high efficiency in the working of the Government that is cost and time effective as well as transparent and having better intra governmental linkages, the Government has embarked on a very ambitious and state of the art program of e-Government in the country. PTA is the first organization in the Federal Government to fully automate all its divisions to electronically process the internal files and replace the existing paper files with e-files. The initiative was taken in October 2005 with the assistance of Ministry of IT. In a short time span of only six months the new system was implemented in PTA on 31st March 2006.

The new system, the Internal Communication Module automated the process of file processing and increases the efficiency of file handling and disposal of cases. Under the new system at PTA a total of 4000 existing paper files were digitally scanned and stored in a database and uploaded to the new IC module initially. The new system is integrated with current e-mail system. The new system has the capability of showing the files during its processing route with an aim to complete the routing procedure within stipulated time and efficiently. Resultantly the processing time of files has drastically reduced and the efficiency of the officers has increased many folds. The system uses digital signatures for authenticity and security.

The new system has the capability to tie into similar system being replicated to other ministries of the Federal Government and will be part of the greater e-government network.

Spectrum Management

Frequency Allocation Board has exclusive authority to allocate and assign portions of radio spectrum to the Government organizations, telecommunication services, electronic media and others in Pakistan. Major tasks performed during the reported period are briefed in ensuing paragraphs.

Spectrum Reframing

After the successful implementation of the two new cellular licenses and spectrum reframing to allow an efficient dual band spectrum allocation to all GSM operators of Pakistan for efficient use of frequencies, FAB has been entrusted the task of facilitating existing licensees in clearing interference issues arising out of the legacy spectrum owners and licensees operating public switched mobile and wireless networks.

In addition, looking forward in the future FAB has been given the task to reframe and clear spectrum for a host of services envisioned for the 3G and 4G era. Government of Pakistan is cognizant of the fact that for developing economies like that of Pakistan the way forward is to open up new lucrative spectrum bands to all wireless broadband access in the local loop.

Although several lots of 3.5 GHz spectrum were allocated in the last round of frequency auctioning but more issuances are being contemplated.

New Spectrum Allocation

Microwave & Broadcasting Frequencies

Several Cellular, WLL and LDI operators approached FAB for allocation of frequencies in different microwave ranges. FAB has allocated 4 channels (40 + 40 MHz each) to Warid telecom In addition, FAB allocated appropriate frequency to 47 applicants for establishment of FM Sound broadcasting Transmitters in various parts of the country during last 6 months. Suitable FM/AM frequencies were also allocated to PBC for smooth operations of Government owned radio-broadcasting agency.

Multi Channel Multi Point Distribution System (MMDS)

PAF and PTCL have also been directed to vacate the MMDS bands and the matter is being handled by the Inter-ministerial Technical Committee on Convergence in the MoIT.

It is expected that fairly soon, some sections of the existing MMDS band shall become available for telecommunication and IT applications that will revolutionize the broadband landscape of

Pakistan. This will clear abundant opportunities for WiMax applications. The regulator has been actively pursuing public awareness through several regulator sponsored workshops and seminars with SARCOP and SAMENA.

3G Licensing

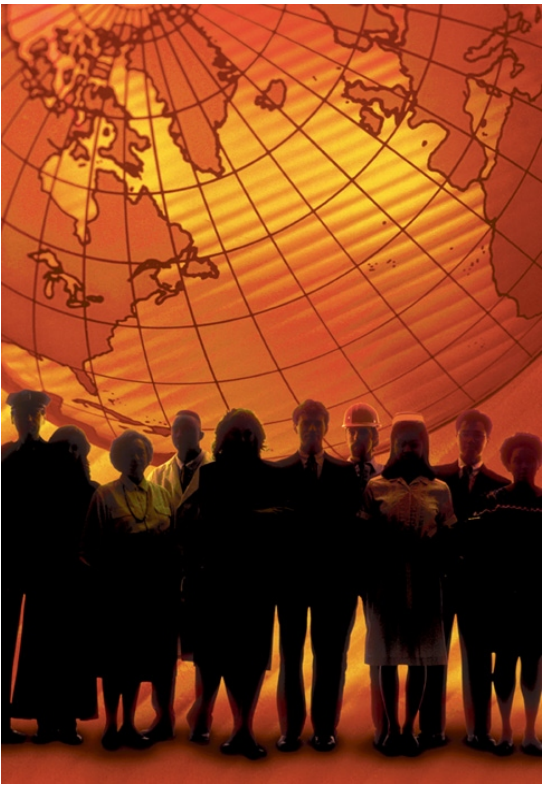
PTA is expected to issue 3G licenses next year. FAB has been asked to clear the 3G spectrum suggested in the Cellular Policy 2003. FAB has been actively pursuing the vacationing and reforming of spectrum with PAF, PTCL, SNGPL, SSGCL, NHA, SUPARCO, NTC, PARCO PAK Navy, NTDC, BP etc for the required 3G bands.

Other Prime Brands

The GSM1800 band has been vacated while the vacation of WLL band is being pursued actively. Pakistan Broadcasting Corporation (PCB) has successfully vacated CDMA 450 MHz Band. Pakistan Television Corporation (PTVC) and Shalimar Television Network (STN) are also being pursued for vacation of CDMA 479 MHz Band. WAPDA and PAF have agreed to vacate the CDMA 1900 Band and move to other suitable frequency bands.

Spectrum Monitoring

FAB carried monitoring by employing MMMS for 3 GHz 18 GHz band to check the status of WLL and microwave bands allocated to various operators and identified 9 and 12 illegal signals in FTR & MTR respectively. Their verification and further evaluation is in progress. FAB also carried out monitoring on complaints of various authorized spectrum users regarding interference issues and resolved 236 cases.



Conclusion

Formulation of a judicious, self sustaining and transparent regulatory framework has been the heart of what the Authority has been doing in order to maintain a progressive and robust telecom industry. The added consideration has been to have such regulatory decisions that not only suit the prevailing scenario in the country's telecom sector but also meet the challenges of the newly emerging technologies in the field of telecommunications.

The Authority's determinations focus on providing a level playing field to all the stakeholders by removing all the bottlenecks, streamlining the procedural matters and fair dispute resolution to the satisfaction of all the concerned parties so that the industry flourishes, private sector operates without impediments and the customers benefit from progressive services.

3 International Relations

Introduction

Pakistan Telecommunication Authority (PTA) maintains close liaison with regional and global telecommunication organizations and regulatory bodies of other countries for sharing of experiences on best international practices to regulate telecom systems and services effectively. PTA actively participates in different events organized by leading international telecom organizations like ITU, APT and SAFIR etc. Through multilateral cooperation, PTA strives to create enabling environment for the development of telecom and ICT sectors domestically, bridging the digital divide across the member states and also provides assistance to other countries in this regard. The main activities carried out by International Liaison Directorate during past one year are summarized below:

Hosting of APT Meetings

PTA hosted two major meetings of the 10th Session of the General Assembly (GA) and 29th Session of the Management Committee (MC) of Asia Pacific Telecommunity (APT) which were held from 30 Nov to 8 Dec 2005 at Islamabad. This was the first time that Pakistan hosted and arranged such a prestigious event. Prime Minister of Pakistan, Federal ministers, foreign dignitaries, important government functionaries and private sector representatives graced different sessions of the meetings. 114 representatives from the 25 Member Administrations, 2 Associate Members and 11 Affiliate

Members attended the event. The General Assembly meeting besides conducting other business matters elected new President and two Vice Presidents during its session. The President of the General Assembly is elected for three year term by member countries. During the first session of GA, Executive Director of APT invited the nominations for the President of General Assembly and Maj. Gen. (Retd) Shahzada Alam Malik, Chairman PTA was unanimously elected as the President. Mr. Charles Punaha (Papua New Guinea) and Mr. Tin Htwe (Myanmar) were elected as Vice-Presidents.

The event was hosted with excellent administrative and management skills that drew gained wide appreciation of all the distinguished participants.

Visit of Secretary General ITU to Pakistan

On the eve of APT General Assembly and Management Committee Meetings held at Islamabad, Mr. Yoshio Utsumi, Secretary General of the International Telecommunication Union (ITU) visited Pakistan from 29-30 November 2005. Mr. Yoshio Utsumi also visited PTA HQs and was briefed about recent developments in telecom sector of Pakistan particularly liberalization process. He was informed that as a result of successful implementation of deregulation policy, different segments of telecom sector are growing at an astounding rate.

Later the Secretary General, ITU planted a tree at PTA HQs and met with PTA officers. PTA memento was presented to him by Chairman PTA. Mr. Utsumi lauded the recent growth of the telecom sector of Pakistan and termed it a success story.

Consultancy & Assistance Provided to other Countries

The recent exhilarating growth patterns in country's telecom sector have drawn wide appreciation and acknowledgment. Emerging global and regional telecom industries look up to Pakistan for guidance and input in the backdrop of a visionary telecom deregulation policy and its successful implementation by the regulator. PTA provided assistance and shared its experiences on different regulatory issues with Uganda, Bangladesh, Bhutan and Oman as detailed below:

Study Visit by Delegation of Uganda

PTA hosted study visit for a delegation of Uganda's Rural Communication Development Fund (RCDF) Board from 19-25 June 2006. The delegation was comprised of six members of RDFC of the Uganda Communication Commission (UCC) and was headed by its Chairman Engr. Dr. Samuel Kiggundu. Series of briefings were arranged in PTA Headquarters which covered areas like interconnection issues regarding projects for universal access , monitoring and evaluation of universal access funded projects and programs, tariff structure and control of universal access services, management and administration of the universal access funds,

access to frequency spectrum by telecom operators under universal access funded projects and programs, tendering procedures and coverage of universal access funds etc. The delegation found the study visit useful and UCC conveyed its thanks and gratitude to PTA for offering assistance in this regard.

Bangladesh

A training was arranged on "Spectrum Monitoring" for a group of officers from Bangladesh Telecom Regulatory Commission (BTRC) on their request. The group comprising six members attended the training from 4 to 8 April 2005. The training covered Spectrum Planning & Management, Frequency Allocation Procedure in Pakistan, Broadcasting Services, Mobile Services, Fixed Services, Spectrum Planning & Management, Spectrum Monitoring Techniques, Spectrum Management Database, Spectrum Monitoring Principles & Goals, Demonstration / Practical Training on VHF / UHF Mobile Monitoring Station, Practical demonstration of Spectrum Management Tasks, Introduction & Demonstration of Mobile Microwave Monitoring System etc.

Assistance was given to BTRC on their special request regarding grant of new mobile license. In this connection, Mr. Muhammad Saeed, Director General (Finance & Commercial Affairs), PTA visited Bangladesh in September 2005 and reviewed the documents drafted by BTRC for issuance of new mobile license and suggested appropriate improvements. He provided expert advice to BTRC officials regarding the bidding process and allied aspects.

Bhutan

On the request of the Ministry of Information & Communications (MIC), Government of Bhutan, ITU Regional Office for Asia & the Pacific at Bangkok, Thailand contacted Pakistan for consultancy support to Government of Bhutan with regard to issuance of second cellular mobile license. A list of suggested experts from PTA was forwarded to ITU Regional Office at Bangkok and Mr. Muhammad Ahmad Kamal, Director, PTA was selected. He visited Bhutan

and provided consultancy assistance from 16 May 2006 to 15 June 2006 (4 weeks) to MIC Bhutan on ICT & Telecom Policy Framework / implementation mechanism and prepared Information Memorandum (IM) for issuance of second mobile license. The bidding for award of license is expected in October 2006.

Oman

In February 2003, the newly established Telecommunications Regulatory Authority (TRA) of Sultanate of Oman approached PTA seeking assistance in setting up of their said organization. They requested the such of few officers on deputation from PTA for transferring knowledge and expertise to their employees for capacity building of their organization. Consequent upon this Mr. Inayat Ullah Khan, Director General (Law), Mr. Muhammad Saeed, Director General (Finance & Commercial Affairs) and Mr. Muhammad Saleem, Director (Economic Studies) were allowed to take up their new job in TRA of Sultanate of Oman. All these officers are still serving in TRA and rendering useful services.

ITU Election Campaign

ITU Plenipotentiary Conference (PP-06) is scheduled to be held from 6–24 November 2006 at Antalya, Turkey. During the course of the deliberations, elections will be held for different positions of ITU. Pakistan has been a very proactive member of the organization and the RR Board and commands huge respect among the member states. Government of Pakistan has decided to contest elections for two positions i.e. **ITU Council seat and Radio Regulation Board (RRB) membership.** Major General (Retd.) Shahzada Alam Malik, Chairman PTA has been nominated by the Government to contest the election for membership of RRB. PTA has prepared a strategy of the election campaign to secure both these positions. The campaign is being conducted in collaboration with Ministry of Foreign Affairs and Ministry of IT&T.

Interaction with Regulatory Bodies

On the invitation of telecom regulatory bodies of other countries, Chairman PTA visited these regulatory authorities to share Pakistan's experience regarding liberalization and privatization of its telecom sector and to discuss important regulatory issues with his counterparts. These visits turned out to be very fruitful and mutually beneficial.

Egypt

Telecom sector of Egypt is undergoing the process of liberalization and privatization. In order to benefit from Pakistan's experience, National Telecom Regulatory Authority (NTRA) extended invitation to Chairman PTA for a visit. Chairman PTA visited Egypt from 17-22 February 2006 and held wide range discussions with his counterpart.

Japan

Ministry of Internal Affairs & Communications (MIC) of the Government of Japan, recognizing and appreciating the transparency and fair mechanism adopted by PTA for

liberalization of telecommunication sector of Pakistan, invited PTA Chairman to Japan. In its invitation letter, MIC applauded personal initiatives and efforts of Chairman PTA which made the vision of telecom liberalization a reality for Pakistan and brought into its folds enormous economic gains for the country. Chairman PTA visited Ministry of Internal Affairs & Communication (MIC) Japan (2-7 July 2007) and called upon the Japanese Senior vice Minister for Internal affairs and Communications Mr. Yoshihide Suga in Tokyo. During the meeting, matters relating to mutual interest came under discussion. Both the sides exchanged views on ways and means for enhancing bilateral relations and cooperation in the field of telecommunications and ICT. Chairman PTA briefed the Japanese minister about the fast paced growth being witnessed in the telecommunication sector in Pakistan. He informed that due to investor-friendly policies of the Government of Pakistan and fair regulatory regime adopted by the regulator, Pakistan's telecom sector has been able to achieve unprecedented growth in recent years. Lauding the Telecom liberalization policies of the Pakistan Government, Mr. Suga said swift development in the telecom sector particularly in the cellular mobile sector has drawn deep appreciation from the global telecom community. He assured his Ministry's full support and cooperation towards exchange of expertise and know how for the introduction of modern telecom technologies in Pakistan. Other senior officials also participated in the meeting and discussed important issues pertaining to regulatory matters of the telecom sector.

USA

Chairman PTA visited Federal Communication Commission (FCC), Qualcomm USA and United States Telecommunication Training Institute (USTTI) from 27-29 July 2006 as part of enhancing cooperation between the two countries in the field of telecommunications and regulatory affairs.

Canada

Chairman PTA visited Canadian Radio-television & Telecommunication Commission (CRTC) and Bell Canada from 30-31 July 2006 and held bilateral meetings with top officials of CRTC.

International Recognition of PTA Achievements

GSMA Government Leadership Award 2006

The Global System of Mobile Association (GSMA), a leading global trade association representing more than 680 mobile operators, awarded Pakistan with the prestigious GSMA ***"Government Leadership Award 2006"*** during the 3rd GSM World Congress 2006 held in Barcelona, Spain. The award was given in recognition of exceptional work done by the

Government and regulatory body of Pakistan in the field of mobile communications policy and effective regulatory framework. Pakistan was chosen amidst stiff contenders including India owing to the unprecedented progress in establishing a thriving mobile communications sector in a span of just three years. Pakistan is the first country from the region to have achieved this pretigious award after only Brazil worldwide.

Global Regulatory Exchange Award (G-REX)

Telecommunication Development Bureau of the International Telecommunication Union (ITU) awarded PTA a "Certificate of Appreciation" for its high level participation and excellent support to the G-REX Regulators' Hotline. Global Regulators' Exchange (G-REX) is a platform for national communications regulators, policy makers and regional regulatory organizations. G-REX acts as a medium for sharing information, views and experiences on pressing regulatory issues. It also has a Regulators' Hotline for sharing information across the world. The Bureau has appreciated PTA's contributions towards the dialogue process among regulators from all over the world and recognized its high level participation and support to the G-REX Regulators' Hotline.

PTA Web Site Rated the Best by LIRNEasia

A survey of the websites of National Telecommunication Regulatory Authorities in the Asia Pacific region revealed that six counties – Australia, Hong Kong, Jordan, Malaysia, Pakistan

and Singapore – stand well above from the rest, with Pakistan leading. The research was conducted by LIRNEAsia, and supported by the International Development Research Center of Canada (IDRC) as part of the research program on regulatory and sector performance indicators in the ICT sector. LIRNEAsia is a regional ICT policy & regulatory capacity building organization funded by IDRC and InfoDev of the World Bank. The organization short listed 27 web sites from the Asia-Pacific Region covering 62 economies and declared that Pakistan leads in providing regulatory services on-line. The web sites were rated on the availability of information including Telecommunications Act and statistical indicators, consumer and citizen information, business information, telecom regulatory news and other features for dissemination to the general public.

Participation in Events of International Telecom Organizations

PTA actively participates in various events organized by ITU, APT and SAFIR etc. The key events held during this year as well as participated by PTA officials include ITU Council Sessions 2005 and 2006 at Geneva Switzerland, APT Operator Forum at Seoul Re-Public of Korea 2005, ITU Forum of the Regional Working Group on Private Sector issues on Promoting ICT Technologies & Broadband Applications Bangkok-Thailand 2005, 3rd GSM World Congress Asia at Singapore 2005, 7th South Asia Telecommunications Regulators' Council (SATRC) Meeting of APT at Maldives 2005, 3GSM World Congress 2006 at Barcelona-Spain 2006, Frequency Coordination Meeting with Satellite Operators of Eutelsat at Paris-France 2006, World Telecom Development Conference (WTDC) at Doha-Qatar 2006, Preparatory Meeting for the Plenipotentiary Conference at Bangkok-Thailand 2006, APT Policy & Regulatory Forum (PRF) at Macao-China 2006 and China-Beijing International High-Tech Expo a Beijing-China 2006.

Foreign Trainings (July 2005-June2006)

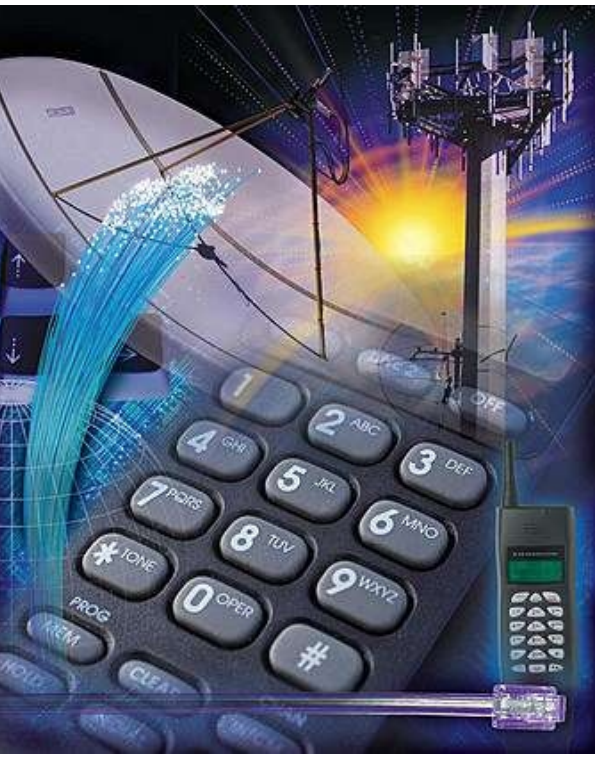
The Authority has been able to fulfill its commitments towards the progress of the country's telecom sector owing to a well prepared, technically equipped and hardworking team comprising of its officers. As part of capacity building program, PTA sends its employees to renowned world institutions to participate in training courses to update their skills and

know how according to the latest telecom trends. During the year under review a total of 11 officers from different cadre attended courses / seminars / symposiums / workshops held in Thailand, USA, Japan, Australia, China, India, Malaysia and Bangladesh. Upon their return the participants prepared Post Visit Reports for information of the Chairman and made presentations to PTA officers.

Conclusion

Pakistan stands as a very proactive and respected member in the comity of Global Telecommunications Organizations. Recent growth trends witnessed in the country's telecom sector, particularly in the cellular mobile segment and the record inflow of FDI in the telecom sector has won laurels from within the country and abroad. Today emerging telecom industries look up to Pakistan telecom regulator for guidance and expertise. Pakistan has emerged as an investor friendly country and has raised its key by successful hosting of key international telecom mega events has raised the image of Pakistan. Fruitful interactions of the Chairman PTA with the teams of various regulatory bodies have not only resulted in mutual benefit in the field of telecommunications and regulatory affairs but have also helped in cementing the existing strong bilateral ties of Pakistan with those countries.

4 Mobile Cellular Services



Mobile Sector Overview

Telecom industry has shown significant improvement since its liberalization was initiated in January 2004, with an unprecedented growth in mobile sector.

Pakistan, over this period, has remained fastest growing domestic mobile market across Asia. Table - 8 above show that although other regional countries are also performing well but, Pakistan has been experiencing more than 150% continuous growth rate for last two years, which is unseen elsewhere. This has placed Pakistan at the top of the list of highest telecom growth achievers.

Table - 8
Mobile Penetration in Regional Countries (%)

Countries	2003-04	2004-05	2005-06
Hong Kong	115.6	123.1	124.4
Singapore	84.0	93.7	100.7
Malaysia	54.6	60.1	76.8
Pakistan	5.7	14.0	22.2*
Sir Lanka	11.3	17.1	17.4
India	4.3	6.8	8.1
Bangladesh	2.0	3.9	7.8
Nepal	0.33	0.98	1.5

*Figures are for June 2006

This growth and development have only been achieved through very bold and positive regulatory measures including

deregulation of telecommunications, reduction in taxes and regulatory fees, slash in mobile termination rates and change of interconnection charging regime to unrounded minutes.

Currently, the mobile sector is undergoing intense competition among the six mobile operators. In this scenario and in the best interest of their long term sustainability, mobile operators are now forming strategies driven towards being at lowest cost, extensive network coverage and connectivity, innovative products and segmentation. Value Added Services have become important over last two years. Operators have launched services like GPRS/ EDGE, MMS, BlackBerry corporate mobile email solution, mobile banking, ringback tones and several other content based options available elsewhere. Due to market growth and tantamount increase in subscriber base since deregulation, operators are also focusing now on retaining customers, improving quality of service, enhanced customer services and above all, packages that concentrate on brand loyalty, such as friends and family (FnF) packages, fractional minute billing, international roaming, GPRS, prepaid roaming, low cost SMS etc. With the same objective and to enhance ARPUs, mobile players are segmenting their customers and announcing packages accordingly to meet their needs. Recent examples include Jazz Octane and DeJuice focused on youth segment, Talkshawk for the financially constraint and students, and various other prepaid and postpaid offerings for the female sector of the society.

Apart from the growing impetus to the mobile industry the Government of Pakistan is also benefitting in terms of increased revenues obtained in the form of taxes, increased employment, access to inaccessible areas, enhanced economic/business activities and above all, better living standards. The telecom industry has contributed Rs. 77.1 billion over the last one year out of which the tax collection is Rs. 59.7 billion. Mobile sector alone contributed 65% of the total tax contribution by telecom sector. The collection in activation tax has increased manifolds, despite reduction in activation tax charges gradually from Rs. 2,000 in year 2002 to the current level of Rs. 500. Some industry analysts attribute reduction in activation charges to be the main triggering factor for mobile sector growth during the last two three years.

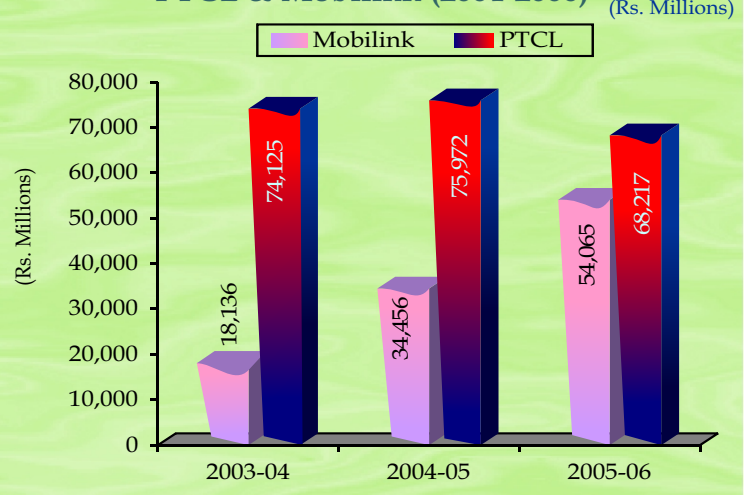
Due to the competitive state of affairs average revenue per user (ARPU) stands at US$ 5.7, reduced sharply by more than 37% over the last two years. However, this reduction is offset by substantial increase in subscriber base increasing overall revenues across the board. Further, the reduction in ARPU, which is mainly from voice centric services, is forcing the operators to explore other avenues for increasing their ARPU. As a result the operators are concentrating on the data services and gearing up for 3G. The revenues of Mobilink, the SMP operator, show an average increase of 65% per year over the last three years and chasing closely the revenues of incumbent operator PTCL. It is noteworthy that Mobilink is providing

only mobile services, whereas PTCL is providing wide range of telecom services to the users and also maintaining the telecom backbone of the country.

Government of Pakistan under its liberalized investment policies has allowed 100% profit repatriation to foreign investors, unconditionally. Due to the stringent rollout obligations and the competition, operators are constantly investing in the networks for capacity and coverage enhancements. Last year, total investments made in the mobile sector were US$ 1,327 million.

Unprecedented growth in mobile sector due to government policies has resulted in largest pool of foreign direct investment, increase in employment in telecom and resulting increase in overall socio economic well being of the country.

Figure - 7
Revenue Comparison of PTCL & Mobilink (2004-2006)



Mobile Sector Financials

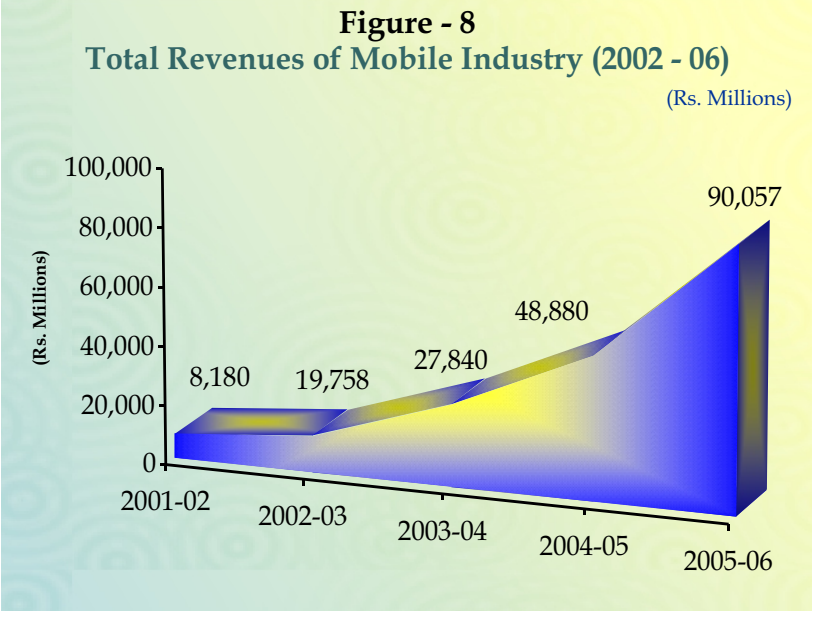
Growth in Operators Revenues

Revenues of mobile sector have increased at an average growth rate of 80% per year for the last two years, despite unhealthy forecasts due to global and regional socio-political situation.

The increase in revenues is attributed mainly to sharp rise in number of mobile subscribers and reduction in tariff.

Highest contributor to the cellular sector revenues was Mobilink - SMP operator, while Ufone, Telenor & Warid have also performed well during the year. All operators expanded their network during this period, with the exception of Instaphone (Pakcom) that is still lagging due to change

Figure - 8
Total Revenues of Mobile Industry (2002 - 06)



of management and ownership of the company.

In order to maintain branding edge and attract new subscribers network expansion towards inaccessible areas is expected to continue resulting in continuing investment commitments from the mobile operators. Fear of WLL also compels the cellular operators to further expand their coverage and improve their service quality.

Table - 9
Total Mobile Industry Investment
(US$ Million)

	2004-05	2005-06	2006-07E
Mobilink	459.0	679.0	336.9
Ufone	162.0	59.0	250.0
Telenor	259.5	352.0	130.0
Warid	198.1	155.9	425.0
Paktel	236.0	81.0	187.0
Instaphone	29.3		
Total	1,314.6	1,326.9	1,328.9
E = Estimates			

Mobile ARPU, has shown a declining trend resulting from intense competition for acquisition of new subscribers and retaining existing customers. ARPU comparison table shows changes during the last 3 years. Last year, the drop in ARPU was 31% and was 8%in 2004-05. This reduction in ARPU is primanly due to more induction of lower income customers. Further, it can be argued that by lowering tariffs the affordability of lower income group increases, which adds to subscriber base and mobile penetration. However, due to low usage pattern of this lower income group, per subscriber revenues (ARPUs) tend to reduce with increased mobile penetration. The above-mentioned phenomenon stands correct for the trends of ARPUs in India & Pakistan, where drop in ARPUs of Pakistan is higher due to faster growth in its mobile penetration. It is expected that usage pattern of mobile users will be improved due to low tariffs and ARPUs will be better in the coming years.

Table - 10
Comparison of Mobile ARPU of Pakistan& India (US$/Sub/month)

	Pakistan	India*
2003-04	9.0	8.6
2004-05	8.3	8.3
2005-06	5.7	6.6
*Source TRAI Reports Average of GSM & CDMA		

Taxes by Mobile Sector

Mobile sector has been one of the major contributor to the government's revenue. During year 2005-06, mobile sector contributed 65% towards the total revenue raised by Government through tax collection which was a mere 31% during 2003-04.

Table - 11
Tax Collection from Mobile Industry
(Rs. Million)

	2003-04	2004-05	2005-06
Activation Tax	4,020	7,577	11,398
GST/CED	5,243	9,872	18,770
Withholding Tax	2,256	4,470	8,584
Total	**11,519**	**21,919**	**38,752**

The revenue sources from mobile sector include Income tax, GST/CED, Custom Duty on import of equipment and activation tax.

The regulator has been striving for reduction in taxes, which is resulted in reduction in activation tax. It has been observed that there is a good elasticity of demand in the sector. The reductions in activation taxes resulted in manifold increase in mobile penetration.

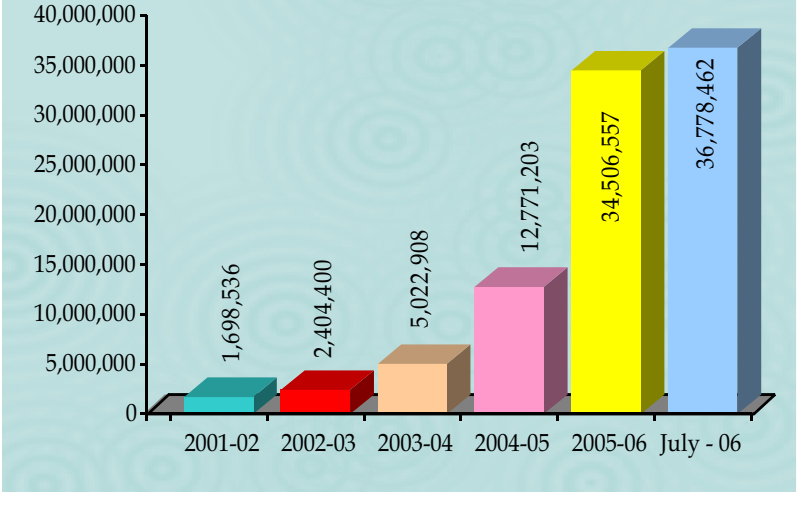
Revenues from Activation tax, amounted to Rs. 11.5 billion in 2005 - 06, which is more than 50% from last year. Similarly revenue from GST/ CED also increased by more than 90% which can be accounted to an expanded subscriber base of 170%.

Subscribers, Coverage & Traffic

Subscribers Analysis

Mobile sector of Pakistan has broken all records of subscriber growth. There are currently 36.8 million subscribers in the country, exclusive of AJ&K and NAs subscribers; where mobile operators have just been awarded license for provision of services. The subscribers growth rate was 109% in 2003-04, 154% in 2004-05 and has crossed 170% in 2005-06.

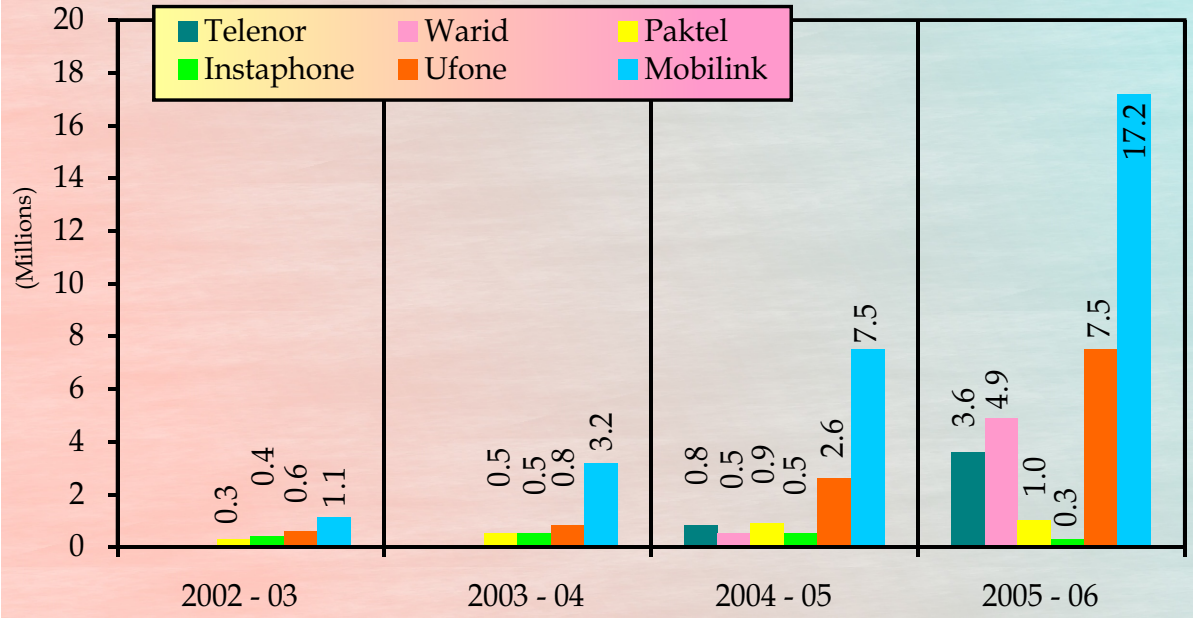
Figure - 9
Total Number of Cellular Subscribers (2001-06)



Company wise Subscribers Growth

As of Jun-06, Mobilink and Ufone have respectively achieved subscriber base of 17 & 7 million. Two new operators Telenor & Warid who launched their services in March and May of the year 2005 respectively, and have performed very well during 2005-06. Telenor added 2.7m and Warid acquired 4.4m subscribers in a short period of one year. Instaphone however, maintained a decreasing subscriber trend during the year, inspite of the fact that its license was renewed in April 2005. Paktel GSM has shown below average growth in subscribers, however, the Operator has proved to be an innovative leader in introducing new commercial concepts to the market, such as credit on incoming calls, low international tariffs, per second billing, monthly flat rates billing etc.

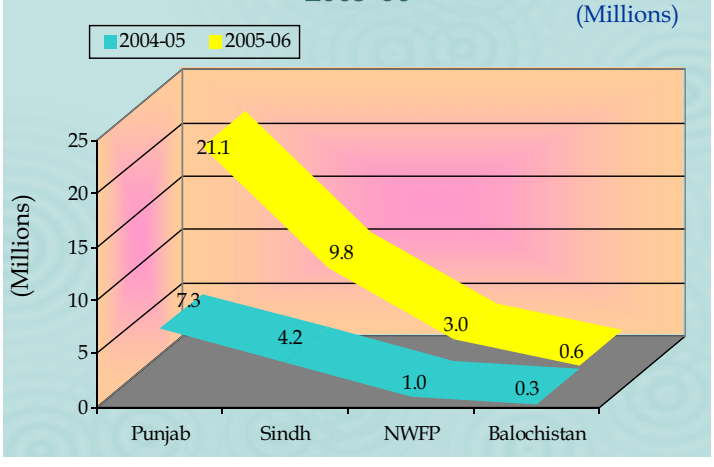
Figure - 10
Company-wise Cellular Subscribers (2003 - 06)



Province-wise Subscribers Distribution

The distribution of mobile subscribers across the provincial geographical boundaries of Pakistan shows that currently maximum number of mobile subscribers are in Punjab followed by Sindh and NWFP. Balochistan has the least number of mobile subscribers but last year's growth has crossed 125% which is very encouraging.

Figure - 11
Province-wise Cellular Subscribers 2005-06



Prepaid/Postpaid Subscribers

The growth in mobile sector is mainly attributed to prepaid subscribers, as is the trend in comparable economies. However, it is also interesting to note that with the launch of two new operators in 2005, the mobile sector has now built more consumer friendly strategies around postpaid packages, resulting in a significant growth in postpaid segment although it still represents less than 4% of the total mobile market.

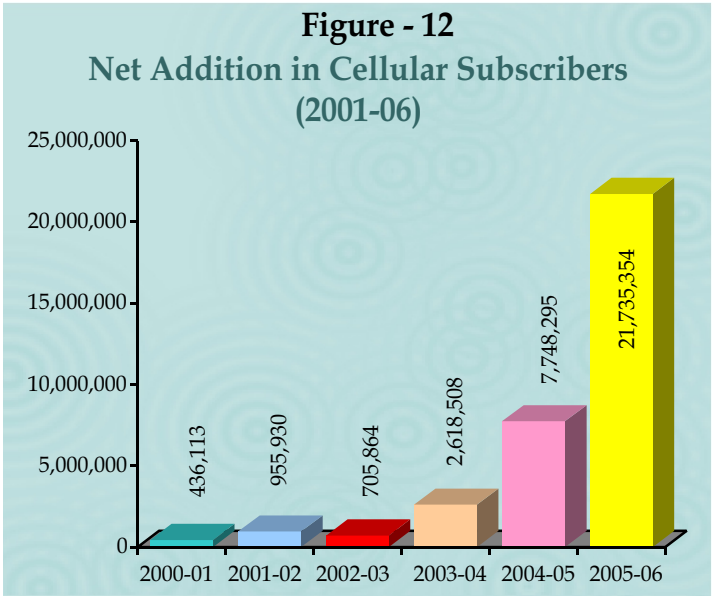
Table - 12
Total Postpaid /Prepaid Cellular Subscribers

Subscribers	2002-03	2003-04	2004-05	2005-06
Prepaid	165,338	225,079	346,420	1,095,738
Postpaid	2,239,062	4,797,829	12,424,783	33,410,928

Net Addition in Subscribers Per Year

The net addition in subscribers per year witnessed a huge jump in the year 2006 where there were almost 22 million subscribers added. From July to December 2005 net addition made to total subscriber base per month was 1.3 million subscribers. The average net addition made per month during the year 2006 stands at 1.7 million. Mobilink made highest net addition among all operators, where 1.1 million subscribers were added to its total subscribers only in the month of June 2006.

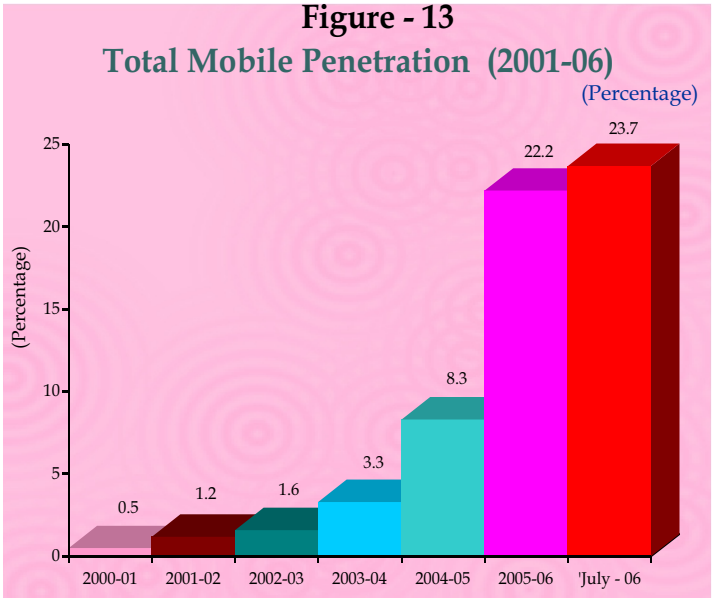
Figure - 12
Net Addition in Cellular Subscribers (2001-06)



Mobile Penetration

Mobile penetration increased tremendously in 2006 and jumped from 8.3% in 2005 to 22.2% in 2006. With such increased penetration, there are still large number of rural and semi urban areas that are inaccessible. It is also important to mention that in metropolitan cities of the country the penetration is expected to reach highest level and some mobile users are even keeping more than one mobile connection, which hampers calculation of mobile phone accessibility per 100 inhabitants. The graph shows mobile penetration for last 6 years.

Figure - 13
Total Mobile Penetration (2001-06)



Province wise penetration given in the Table -13, showing NWFP and Balochistan province with minimum penetration, indicates significant improvement in last three years. While looking at the penetration levels separately in each province, Balochistan has performed extremely well in terms of increase in mobile penetration. The penetration in Balochistan grew by more than 125% in just one year, since PTA took some major initiatives for its improvement. These initiatives include special directions given to mobile operators for expanding their

networks deep in the province and making PTCL network available to other mobile operators for necessary interconnection in areas with no mobile access.

Table - 13
Province wise
Mobile Penetration (%)

Province	2003-04	2004-05	2005-06
Punjab	3.4	8.5	23.9
Sindh	4.5	11.7	27.3
NWFP	1.7	4.1	12.2
Balochistan	1.5	3.6	8.1

Market Share

Mobilink continued to be market leader in terms of market share by subscribers in 2006 although the company lost its share of 8% in the reporting year i.e. from 58% in 2005 to 50% 2006. Warid accquired 10% market share in 2006 and has 14% of total mobile subscribers in Pakistan at the end of 2006. Ufone and Telenor also gained some market share where Instaphone lost its market share of 3% during the year. Similarly in terms of revenue Mobilink maintained highest market share of 59% in 2006 followed by Ufone, Warid and Telenor. It is however, noteworthy that Mobilink, the SMP operator has 50% share in the market in terms of subscribers whereas its share in terms of revenue is 59%, showing huge revenues the company is earning from its subscribers. Figure shows comparison of revenue wise market share of cellular mobile companies for 2005 & 2006.

Figure - 14
Market Share by Subscribers

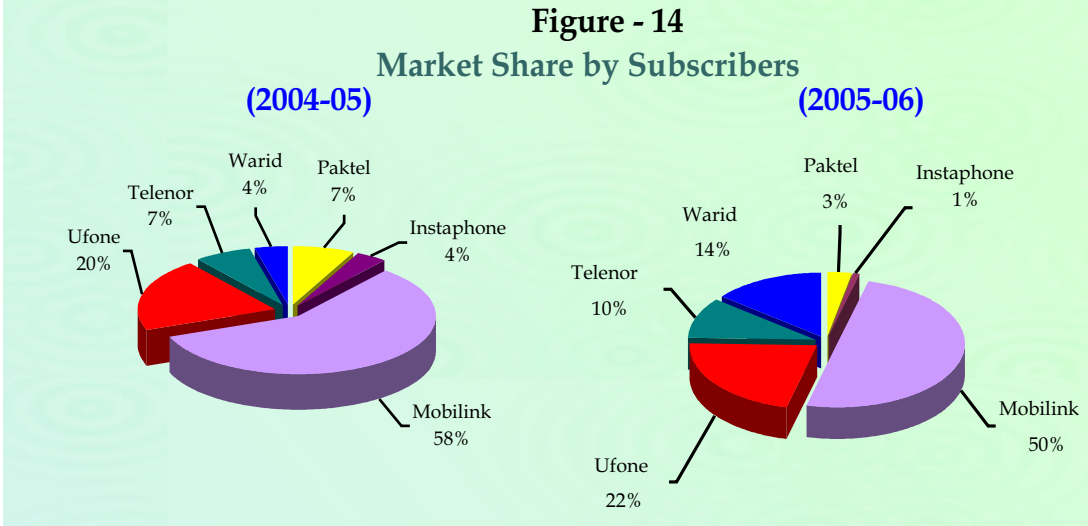
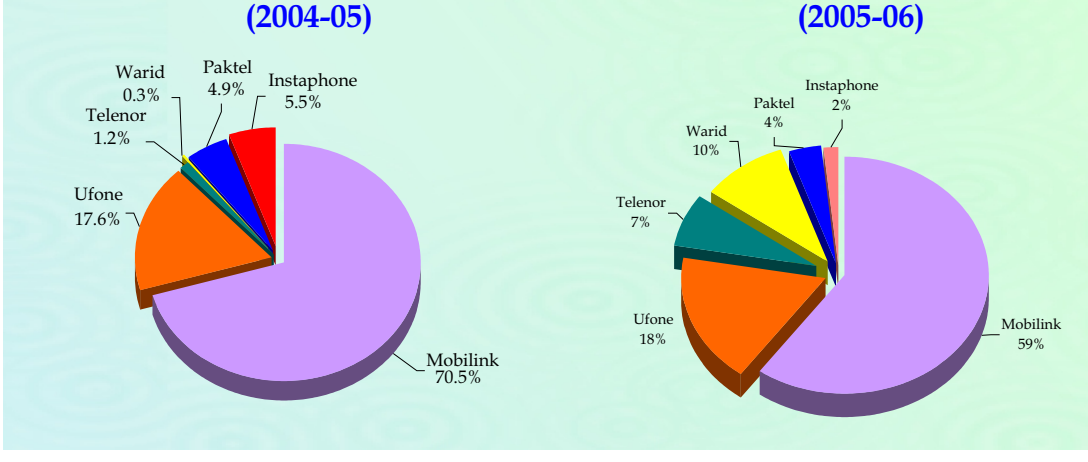


Figure - 15
Market Share by Revenue



Coverage

In the year 2006 mobile operators further expanded their networks. Although Mobilink led the industry by increasing its presence to 808 cities/towns/villages in 2006, which stood at 352 cities in 2005, both the new operators extensively rolled out their networks across the country. At the end of 2006, coverage of Telenor & Warid reached 293 and 137 respectively, showing aggressive approach towards network expansion. In terms of population coverage, the mobile network is covering almost 73% of population in the country.

Table - 14
Cities/Towns Covered (2006)

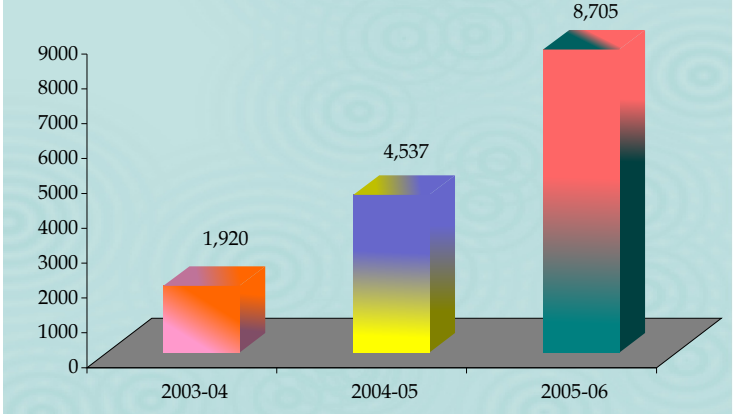
	Mobilink	Ufone	Paktel	Insta	Warid	Telenor
Punjab	472	157	175	64	81	170
Sindh	183	42	82	35	36	59
Baluchistan	23	11	5	4	7	5
NWFP	130	25	48	13	13	59
Total	808	235	310	116	137	293

Table - 15
Population Coverage by Mobile Services (2006)

	Percentage Coverage
Punjab	79%
Sindh	75%
Baluchistan	34%
NWFP	63%
Overall Pakistan	73.3%

The operators also extensively invested in erecting their cell sites in new as well as already covered areas. In 2006 the operators covered more cities as compared to 2005. Similarly cell sites added this year were also higher than the cell sites erected last year. Figure-16 shows comparison of last three years' total cell sites across the country. In 2005 only total cell sites by all operators were 4537 which grew to 8705 in 2006 showing a growth rate of more than 90%.

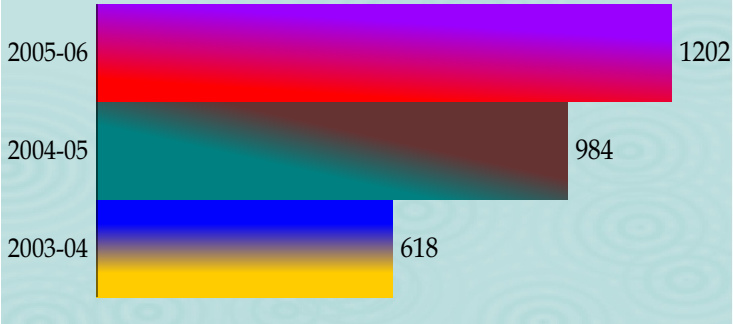
Figure - 16
Total Cell Sites (2004 - 06)



Total Franchises

All mobile operators penetrate in the local market through their designated franchises. These franchises in addition to providing connections and other customer care services to subscribers also provided employment opportunity in respective localities Total franchises by all operators grew by 60% in 2005 whereas it grew by only 22% in 2006. Operators including Paktel and Instaphone negatively affected this growth since Instaphone started closing its franchises whereas Paktel stopped giving official status to franchises and changed its policy with freelance franchises concept.

Figure - 17
Total Franchises of Mobile Operators (2004 - 06)



Mobile Traffic

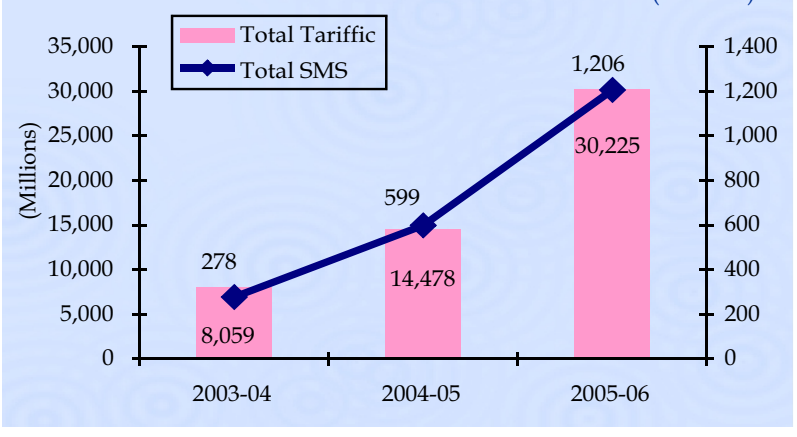
Total Traffic

Significant growth in mobile sector subscriber base has also resulted in increase in mobile traffic. During the last two years, total minutes have increased by more than 275%. This increase is indicative of the elasticity in demand due to reduction in tariff packages offered by mobile operators.

Short Messaging Service (SMS)

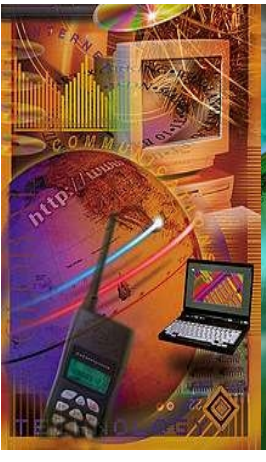
Short messaging is considered to be the most popular value added service (VAS) that mobile operators offer. Although SMS is considered to be a successful concept in countries with high literacy rate, it is popular in Pakistan where operators offer services like SMS in regional languages, voice messaging etc. It is yet to gain momentum due to comparatively cheaper SMS prices. The following table shows increase in SMS traffic during the last three years.

Figure - 18
Pakistan Mobile Industry
Total Traffic Vs Total SMS (2004-06)



In year 2004-05 SMS traffic was high due to the free SMS promotion launched by one of the new operator that resulted in significant jump. In 2005-06 growth was 100% in total SMS.

Comparing the voice and data growth in Pakistan, it is obvious that the two markets grew at a rate of more than 100%. Total minutes increased by 108% during 2006 where as SMS increased by 116%. Graph shows comparison of SMS & total minutes for the last three years.



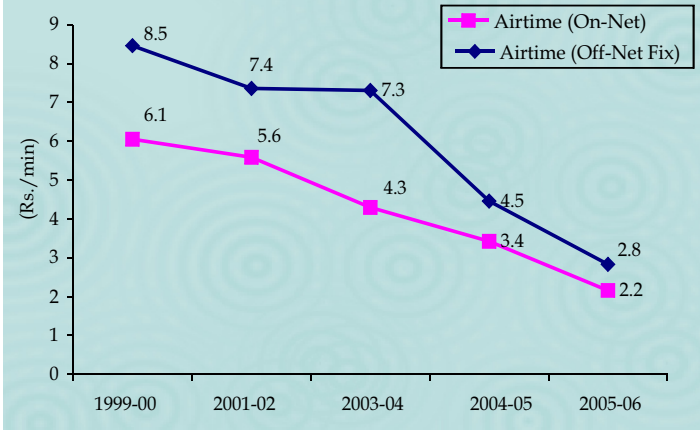

Tariff Analysis

Table - 16
Mobile Cellular Tariffs
(Rs./minute)

Services	2004-05		2005-06		Reduction (%)	
	Max	Min	Max	Min	Max	Min
On -net	5.75	2.00	3.00	1.50	48	25
Off -net Fix	7.76	3.00	3.45	1.75	56	42
Off -net Cell	7.75	3.00	4.35	2.25	44	25

The tariffs of all telecom services in general and cellular mobile service in particular have reduced considerably. The impact of reduced tariffs have resulted in increased subscriber base as well as increased usage. As evident from the table, reducing trend is being witnessed in cellular mobile tariffs. The maximum on-net tariffs, which were Rs. 5.75 in 2005, have come down to Rs. 3.00, which in percentage terms turns out to be 48%. Similarly, the maximum off-net tariffs for fixed-line and cellular mobile have been reduced by 56% and 44% respectively.

Figure - 19
Tariff Reduction - Cellular Mobile
(Weighted Average Tariffs)
(Rs./minute)



In order to attract more customers, Paktel introduced per second billing for on-net calls whereas Ufone simplified its tariff structure and offered uniform call rates at Rs. 2.50. The reduction in mobile termination rate (i.e. from Rs. 1.60 to Rs. 1.25 per minute) has further intensified competition in cellular mobile segment as the operators are now offering tariffs on per second, per 30-second and per minute basis. Telenor introduced 30-second billing for on-net and off-net calls whereas Paktel introduced free on-net calls at Rs. 500 per month. All the cellular mobile operators are also offering friends and family packages in the range of Rs. 0.50 to Rs. 2.00 per minute. Some of the cellular mobile operators have also included fixed-line numbers in friends and family package. The SMS tariffs that were Rs. 1.50 per message have also been reduced to Rs. 0.10 per message. The cellular mobile operators are offering attractive international long distance tariffs at Rs. 1.95 per minute.

Mobile Handset Market Review

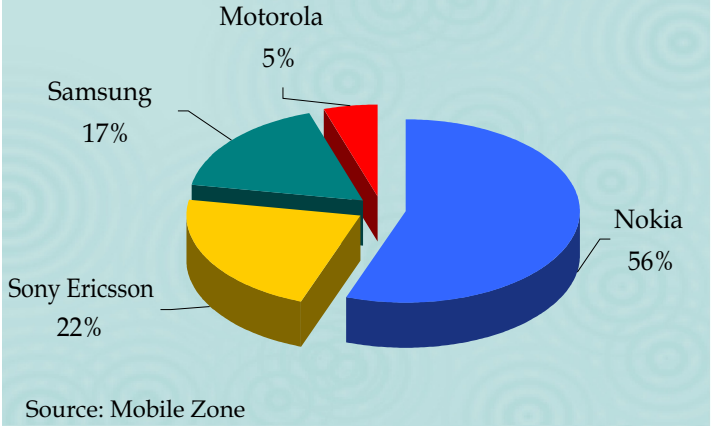
The global mobile handset market is becoming more exciting with every passing by year. Mergers and acquisitions of handset manufacturing companies and electronic companies are resulting in invention of extremely advanced and exceptionally cheap handsets in the markets.

Pakistan mobile handset market is also affected by the global market trends in addition to tremendous growth in local subscriber base. The handset market is getting formalized with

every passing year where companies like Mobile Zone, United Mobile and Advance Telecom are standardizing handset sales. Import of handsets through proper channel is increasing and reduction is observed in availability of smuggled sets. Similarly market segmentation into high end, middle end and low-end handsets is resulting in appropriate choice availability to all types of customers.

Figure - 20

Mobile Handset Market by brands



Source: Mobile Zone

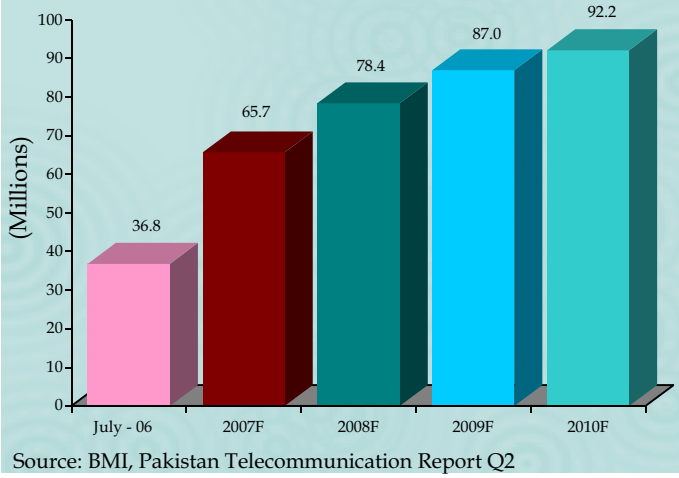
The total value of handsets imported in Pakistan during 2005-06 crossed US$ 1 billion and forecasted growth in this import is 25% annually. According to estimates provided by local resellers the number of handsets imported currently stands at around 750,000 to 800,000 per month. Advanced technology and sophisticated sets are now commonly available in the local market and handsets with camera and music are now becoming very popular and this trend looks to grow in the next two years as these features will become standard in the future. The market is dominated by four major players, Nokia leading with 55%, Sony Ericsson 22% Samsung 17% and Motorola 5% market share respectively. In addition to larger groups like United mobile, Mobile Zone etc. other handset shops are everywhere in the country, according to an estimate there are 12 to 15 thousand mobile phone shops across Pakistan. This large number of handset shops has also generated huge employment opportunities in the county and indirectly they are employing an estimated more than 60,000 people within the industry.

Forecast for Mobile Subscribers

Mobile sector performed well in the year 2006 with an average net addition of over 1.7 million per month. While forecasting the mobile market, Business Monitor International has estimated 65 million subscribers for Pakistan by 2007 with penetration touching 43%.

Figure - 21

Mobile Subscribers Forecast 2007-2010



Source: BMI, Pakistan Telecommunication Report Q2

However, foreseeing the market conditions in the next year; impact of privatization of PTCL on Ufone's performance, implementation of Mobile Number Portability and Mobilink's unexpectedly intense expansion would result in deviation from any estimates.

5 Long Distance & International Services

Introduction

Liberalization of the "long distance & international" segment of the telecom sector in 2004 resulted in award of 14 new LDI licenses apart from the incumbent PTCL and NTC. All of these companies except for 2 new ones started their commercial operations during 2005. Intense competition in the LDI section has resulted in drastic reduction of international and nationwide tariffs and substantial increase in traffic. Especially the calling cards of various LDI operators are offering very competitive tariffs. Currently Callmate, Burraq, DV Com, Circlenet, Dancom, PTCL, Wateen and Worldcall are providing international calling card facilities.

It is expected that Multinet, a new LDI, which is laying optic fiber across the country would be able to provide infrastructure facilities to other operators.

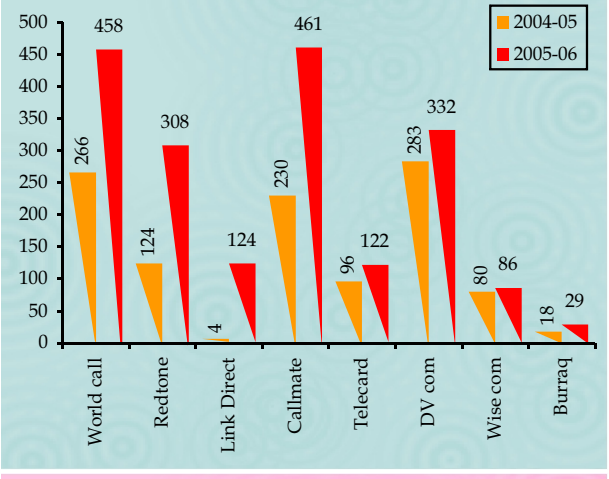
Infrastructure of New LDI Operators

LDI licenses are subject to strict rollout obligations under license, especially when it comes to transmission media ownership. LDIs have to own 10%, 30% and 50% of their total transmission of media within one, two and three years respectively. However considering the high stakes of the market, the lease of transmission media for five or more than five years is also accepted as ownership by PTA. This

relaxation has helped the growth of the sector and most of the LDIs have established their Point-of-Interconnect in all fourteen telecom regions of the country. However the development of long haul infrastructure has been quite low. Only two operators, (Wateen and Multinet) out of fourteen LDI licensees have installed considerable part of their long haul infrastructure.

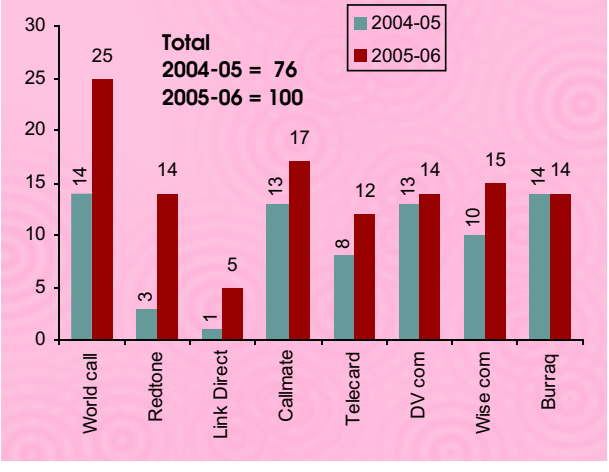
Multinet, the new LDI licensee is developing its own nation wide fiber optic back bone. At present all of the telecom operators are relying on PTCL's infrastructure. Wateen has also started laying nationwide fiber optic infrastructure. These two alternatives are considered to be enough for providing infrastructure redundancy in the country.

Figure - 22
Circuit Capacities (MBs)



Most of the operators have installed their soft switches at Islamabad, Lahore and Karachi and are routing traffic from all over the country through media gateways to these switching locations. Majority of operators have leased heavy bandwidth for IPLC and are relying on international traffic termination and origination as their core business.

Figure - 23
Points of Presence by Companies



Financials of LDI Market

The LDI market in Pakistan is at its nascent stages and all the new LDI operators are aggressively participating in the market to capture the maximum share of LDI business in the country. During the outgoing year, companies almost doubled their investments in the expansion of their network capacity and infrastructure. Furthermore, the commercial operations of new companies got real momentum during 2005-06 and this increased their revenues by 168% during the year. However, profits in the market are not so high due to reduced tariffs and most of the companies would reach their economic breakeven point within next one year and would be able to enter into a profitable business.

Table - 17
Revenues and Investments by New LDIs

(Rs. Million)

	2004 -05	2005 -06	Growth (%)
Revenues	4,935	13,235	168
Investment	2,430	4,104	69

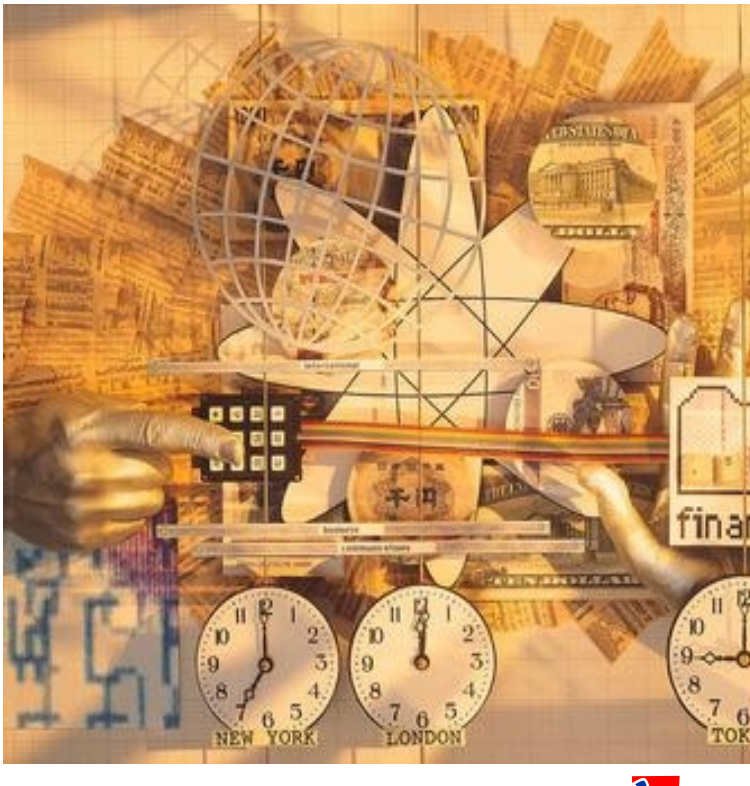
Tariff Analysis

Competition and application of new technologies in the sector resulted in a sharp decline in the international and nationwide call charges. LDI operators, mobile companies and the incumbent operator PTCL offered significant decrease in their tariffs in order to increase the traffic on their networks.

Tariffs of Calling Cards

Intense competition has been witnessed in calling card business. The LDI operators have drastically reduced international long distance tariffs in order to capture market share. The minimum international tariffs, which were Rs. 58 in 1996, are as low as Rs. 0.99 per minute and NWD call is available at Rs. 0.52 per minute. DVcom was the first operator, who made substantial reductions in international long distance by offering Rs. 4.00 per minute (from Rs. 23 per minute). This move resulted into price war and forced other LDI operators to reduce their long distance tariffs. As a result, the LDI operators made aggressive marketing in order to attract consumers. (See Annex -7)

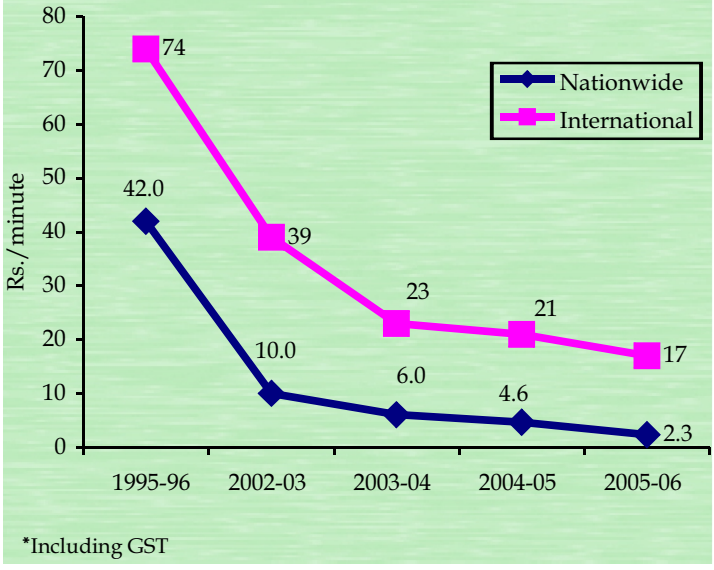
Callmate, Dancom and WorldCall calling cards have lowest tariffs in the market. The lowest tariff sector, using international calling cards, are UK, US, Canada, Australia, and some other European/Far Eastern countries. These companies have also reduced the rates for international calls on mobile networks. These low tariffs have also resulted in higher outgoing traffic. Recently, due to reduction of mobile termination rate, the calling card operators have also lowered local mobile and NWD mobile tariffs. The LDI operators used to charge Rs. 6.00 per minute which have been reduced to Rs. 0.99 to Rs. 1.98 per minute. In addition, international long distance call charges from cellular mobile have decreased by 83% during the year 2005-06.



PTCL Tariffs

PTCL, the incumbent is facing intense competition from calling cards and cellular mobile operators due to their low tariffs. Mobile operators abolished their national long distance tariffs (which used to be Rs. 9 per minute) and are now only charging airtime for national long distance calls. This affected national long distance traffic of PTCL, which has been diverted to cellular mobile networks. Similarly, the international traffic also shifted to new LDI operators. Thus, low traffic on the PTCL resulted in low PTCL revenues.

Figure - 24
PTCL Tariffs over the years 1996-2006 (Maximum Tariff Slab)*



*Including GST

The new management of PTCL reduced their international tariffs by 67% and nationwide by 50%. Regarding nationwide service, PTCL is offering distance-less and timeless tariffs of Rs.2.3 per minute (including GST) to their subscribers, whereas for NWD mobile, PTCL is charging uniform tariff of Rs. 3.45 per minute (including GST). Furthermore, three tariff slabs for international long distance calls ranging from Rs. 5.75 to Rs. 17.00 per minute (including GST) were also introduced in the market.

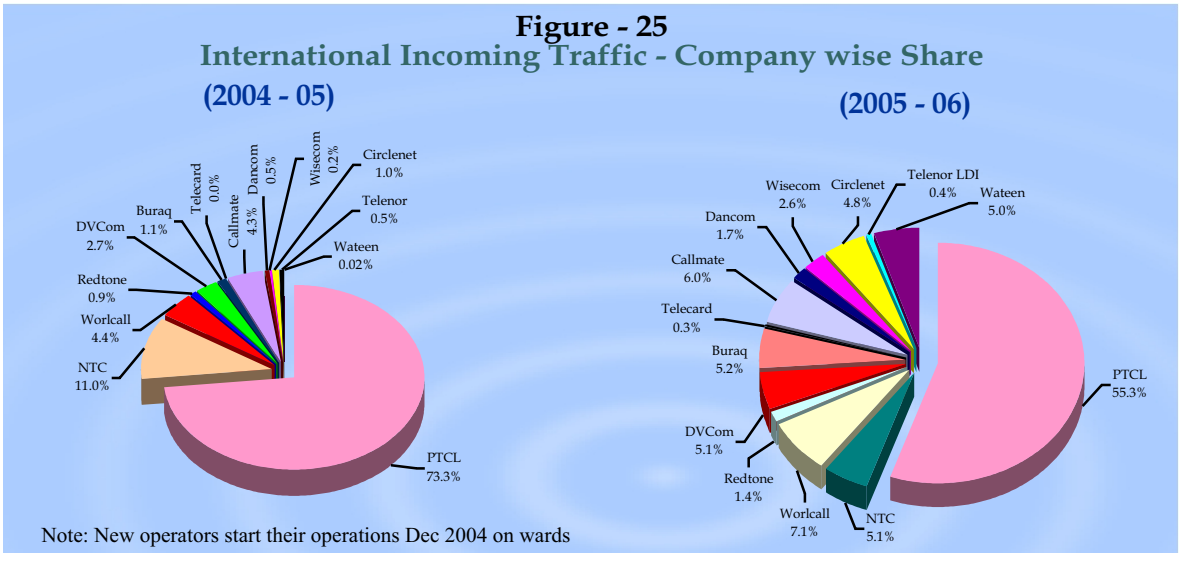
Traffic Analysis

The changing telecom environment in the country and introduction of competition in the LDI sector has changed traffic patterns particularly the international one. International traffic has increased significantly due to easy access and reduced tariffs. Average duration of an incoming international call has also increased from 1.7 minutes to 1.9 minutes per call. New LDI companies have increased their international traffic many fold over the last year, however, the incumbent operator PTCL is still the main player in this business.

International Incoming Traffic

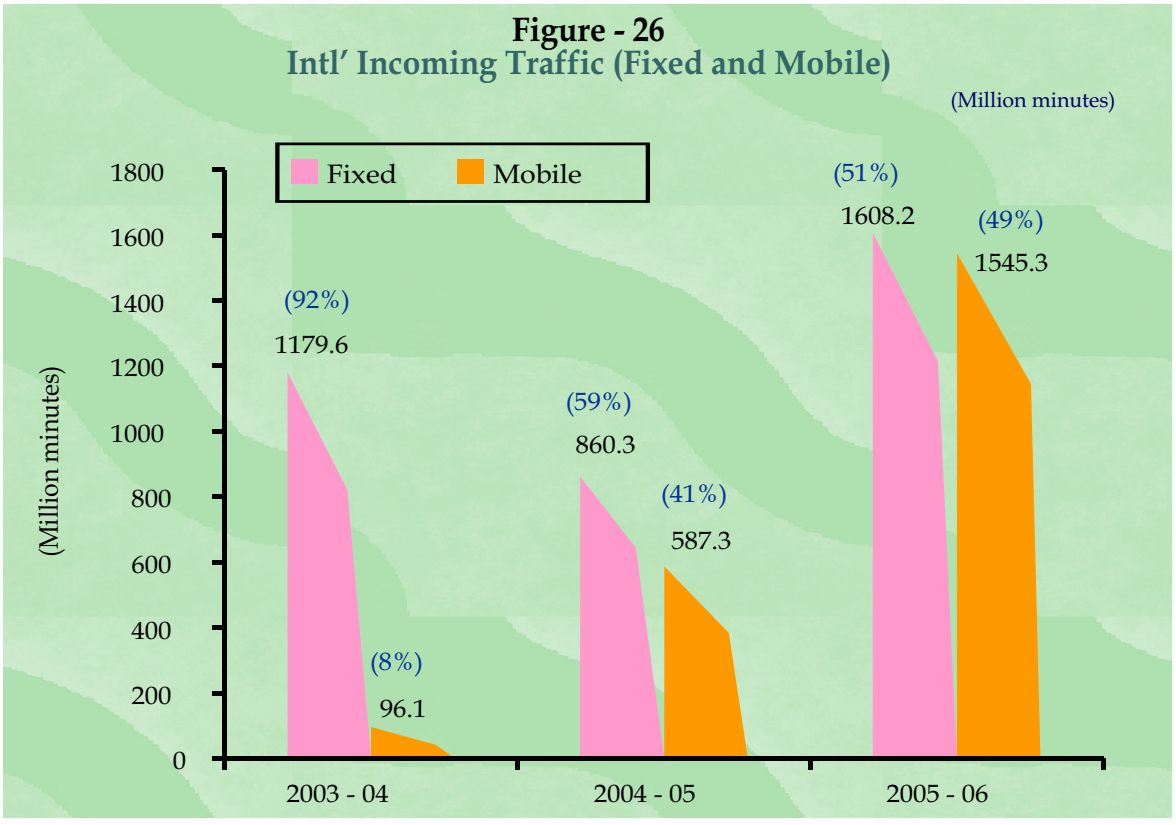
Overall international incoming traffic in the country has shown a growth of 118% during 2005-06. During the year, out of the 3,153 million minutes of international incoming traffic 40% was brought in by the new LDIs. However when compared to the previous year, PTCL and NTC

Figure - 25
International Incoming Traffic - Company wise Share



Note: New operators start their operations Dec 2004 on wards

Figure - 26
Intl' Incoming Traffic (Fixed and Mobile)



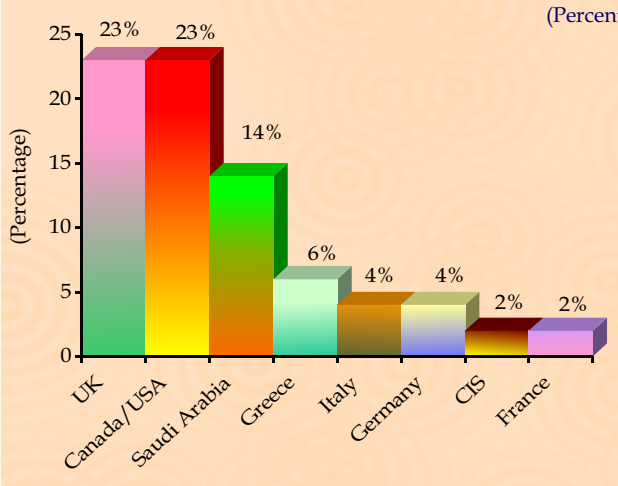
terminated 65% more international incoming traffic. Among the new LDI companies, Worldcall has emerged as a major operator in terminating traffic and its share in total incoming traffic during 2005-06 is greater than 7%, Callmate Telips, Buraq and DVCom terminated 6%, 5.2% and 5.1% of the total international incoming traffic respectively.

With the increased mobile phone usage, the call termination of international incoming calls on mobile networks has also increased. In 2005-06, almost half of the international incoming minutes were terminated on mobile whereas this figure was just 8% during 2003-04.

International Incoming Traffic by Major Countries and Recipient Cities

An analysis of the incoming traffic of four major new LDI operators for the first quarter of 2006 revealed that almost half of the incoming traffic is received from UK and USA/Canada region whereas incoming traffic from Saudi Arabia was 14 percent. Gujrat and Rawalpindi cities have emerged as the major recipients of this incoming traffic on fixed lines. Major reason could be that a large number of Pakistanis living abroad belong to this region.

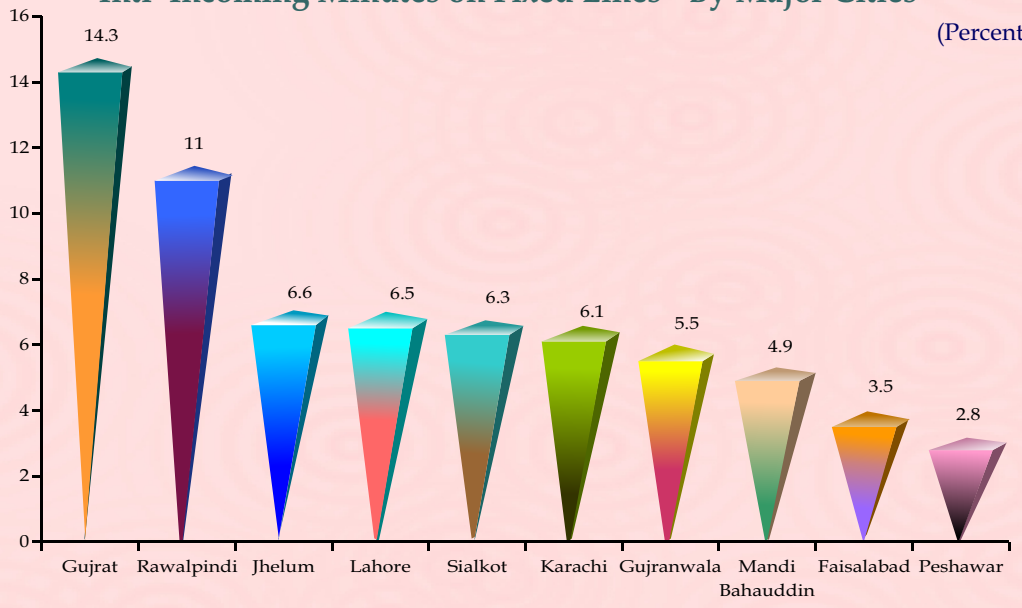
Figure - 27
Intl' Incoming Minutes by Major Countries*



*Based on four major new LDIs data for Jan - Mar 2006

Figure - 28

Intl' Incoming Minutes on Fixed Lines - By Major Cities*



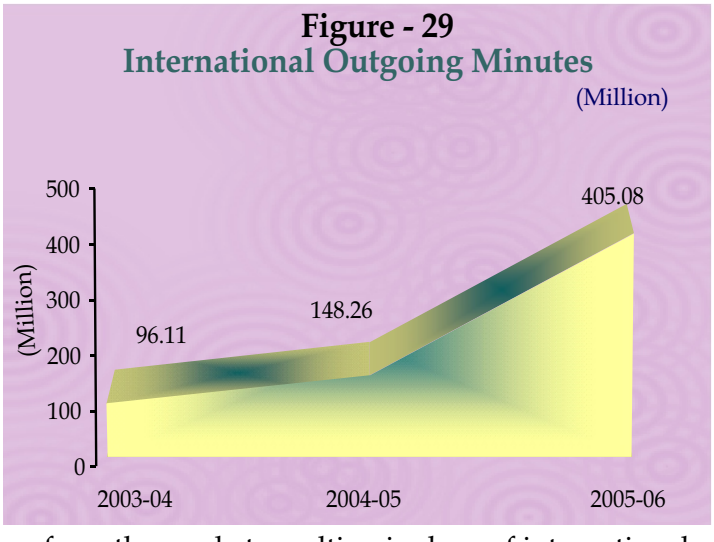
* Based on four major new LDIs data for Jan - Mar 2006

Outgoing International Traffic

The competitive landscape of the LDI segment has resulted in a surge in outgoing international traffic where very low tariffs are being offered by the new operators. A growth of 173% was witnessed during the year in overall international outgoing minutes. New LDI operators have outperformed the incumbent (PTCL) i.e. during 2005-06, more than 72% of the international outgoing traffic was through the new LDI operators. Callmate Telips and Link Direct have emerged as the main carrier of outgoing international call minutes.

Figure - 29

International Outgoing Minutes



Conclusion

The LDI operators in Pakistan are competing with each other to attract the maximum traffic and revenue shares from the market resulting in drop of international and nationwide call rates to a historic low. Use of advance technologies and network deployment by some companies would further provide stability in the existing LDI market which is at its initial stages of development.

6 Local Loop Services

Under the Telecom Deregulation Policy (2003), the Authority has been delegated with the powers to issue two types of local loop licenses namely **Fixed Local Loop (FLL)** and **Wireless Local Loop (WLL)**. Both the licenses are technology neutral which implies that the choice of technology is left with the operators. This chapter covers the overall status of these two services and the individual performance of FLL and WLL companies.

Fixed Local Loop Services

With the announcement of deregulation policy in 2003, Pakistan Telecommunication Authority awarded local loop licenses to 38 companies in 14 telecom regions of Pakistan in the first round of licensing. Local Loop licenses were issued to promote competition in the local loop sector, improve redundancy in access network and increase teledensity in the country. All the licensees were required to establish at least one network connection point in their respective licensed region within 18 months of award of license. However, out of 38 FLL licensed companies only 4 have started their operations after receiving commencement of service certificate from the Authority. With such slow progress in the commencement of services the local loop operators have been given another 12 months to start their services.

The companies which have been able to start commercial operations and run them successfully include Brain Limited, Union Communication, WorldCall Broadband and WorldCall Multimedia. 5 more companies including Dancom, Call 2 Phone, Hazara Communications, Nayatel and Wise Communication have also installed their equipment and applied for commencement of service certificates. Two of these 5 companies, Nayatel (ITR) & Call 2 Phone (LTR) have 10,000 and 200 lines installed capacity respectively.

Brain limited is currently providing services in Lahore region. The company is providing integrated voice and data services through optic fiber to the home; in addition the company is also providing ultra fast broadband services to its corporate clients. Union Communication is also providing local loop services including voice and Internet over fiber optic in Lahore region only. Worldcall broadband and Worldcall Multimedia are providing services in Karachi and Lahore respectively. Both the companies are providing voice over cable, Internet and cable TV to its consumers through fiber optic laid across Lahore & Karachi.

Pakistan Telecom Authority is well aware of slow progress in this segment and is making all efforts to remove bottlenecks that are creating hurdles for its growth. The Authority has identified several issues that are hindering the new licensees from starting their operations. These issues include inadequate infrastructure, Right of Way issues and stringent roll out obligations. PTA has granted 12 months extension in roll out to ease the roll out obligations of LL operators and is taking up the other issues with relevant authorities.

Looking at the current situation of local loop market, it has been decided that further local loop licensing should be put on watch-hold for next seven years. This decision has been made based on the implications that with 38 Local loop companies, there is a possibility of market saturation. Similarly some of these companies are approaching the authority for cancellation/ transfer of their local loop licenses. Also there is a stronger substitution effect due to availability of wireless services on lower rates and easy accessibility.

Fixed Line Subscribers

PTCL, the incumbent operator still has 98% share in local market however, its fixed line connections dropped during reported period due to fierce competition from WLL and other services. Currently there are 5.24 million fixed line subscribers, which were 5.23 million in 2005. There is an increase in subscriber base of all new FLL operartors.

Figure - 30
Total Fixed Line Connections (2004-06)

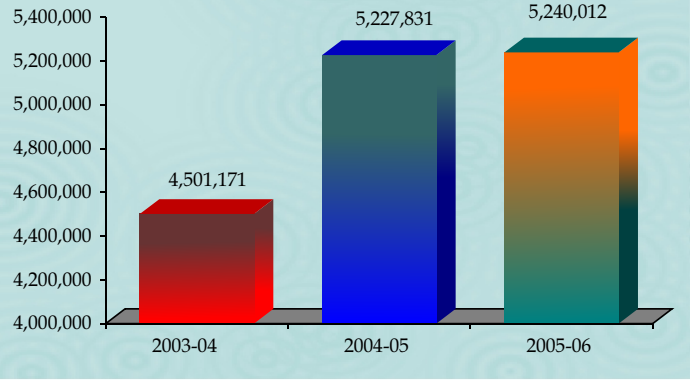


Table - 18
Fixed Line Subscribers 2005 - 06

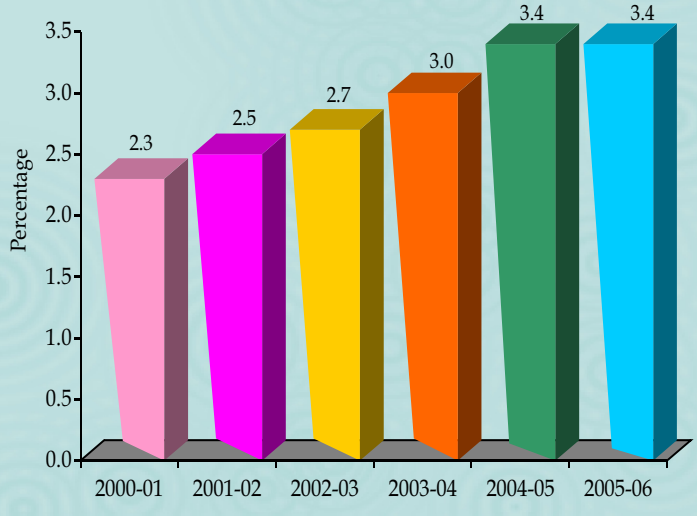
Companies	Punjab	Sindh	NWFP	Balochistan	Total
PTCL	2,933,665	1,401,170	656,597	137,010	5,128,442
NTC	55,776	24,729	8,469	3,189	92,163
WorldCall Broadband	927	12,400	0	0	13,327
Brain Limited	5,880	0	0	0	5,880
Union Communication	200	0	0	0	200
Total	**2,996,248**	**1,438,299**	**665,066**	**140,199**	**5,240,012**

Total Subscribers of SCO are 104,240 as on 30th June 2006

Fixed Line Teledensity

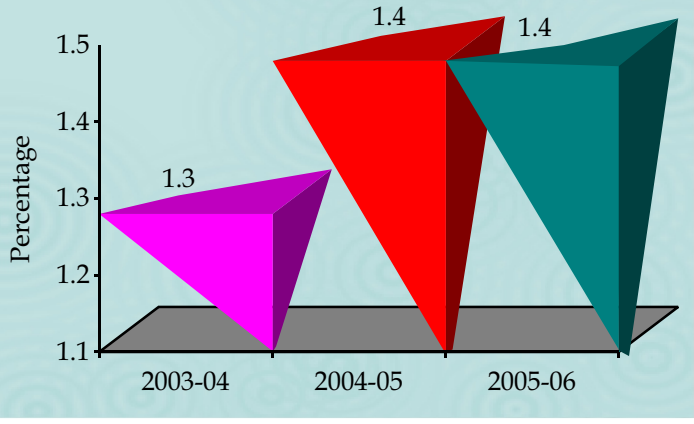
Fixed line teledensity in Pakistan showed an increasing trend from 2001-05, however in 2006 it became stagnant. It is now expected that the fixed line teledensity will rise as the new operators roll out. Although, a few new local loop operators have started their services they have not been able to bring any significant change in the total fixed teledensity in short span of time. Substitution of fixed line services by cellular and WLL services is also a reason behind the slow growth of this segment. Although, there is more than 100% increase in

Figure - 31
Fixed Line Teledensity (2001-06)



overall teledensity but all this increase has been mostly in the wireless segment. The rural teledensity of Pakistan today stands at 1.36% showing a decrease of 4% in one year, whereas Urban teledensity in Pakistan stands at 7.61% showing an increase of around 2%. Total Rural Urban fixed line teledensity from 2004-06 are given at Annex - 8.

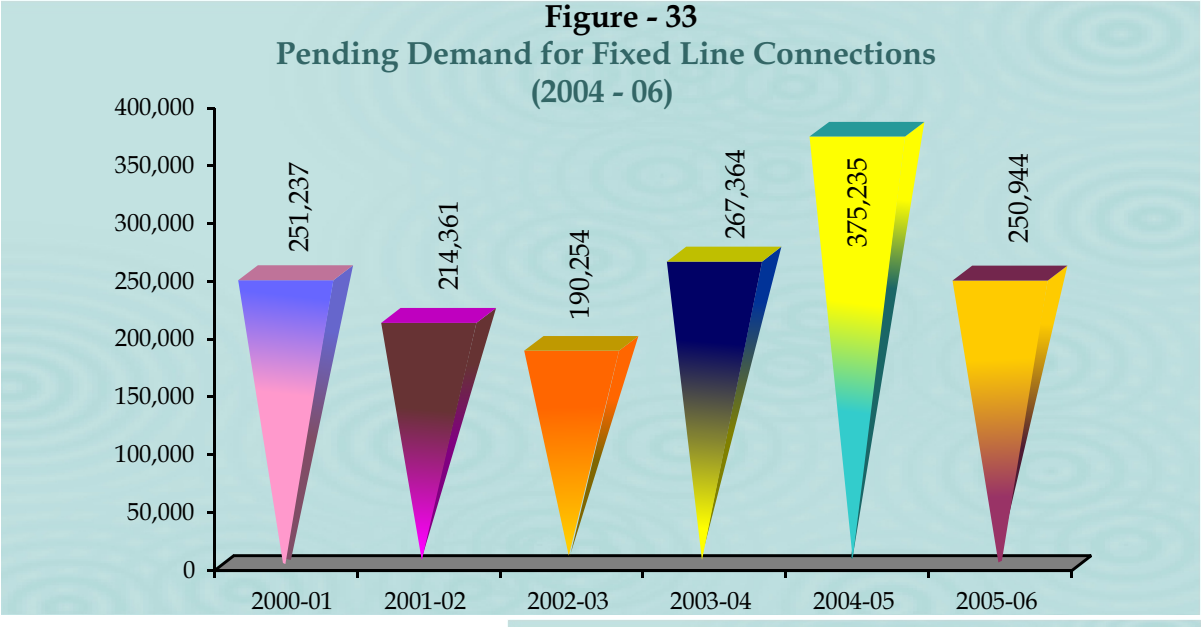
Figure - 32
Rural Teledensity (2004 - 06)



Pending Demand

There remained an unmet demand and long waiting list for fixed lines connections for a long time due to monopoly of PTCL to provide the service. However, the trend seems to be changed in 2006 and a drop in the pending demand has been observed.

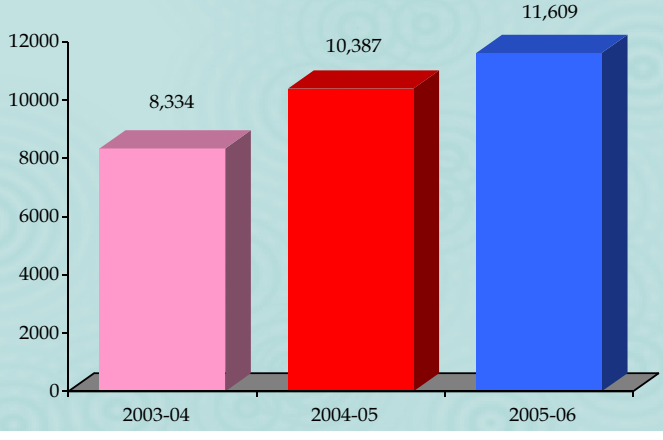
Figure - 33
Pending Demand for Fixed Line Connections (2004 - 06)



Infrastructure Growth

With advancement in technology, deployment rate of new infrastructure in the local market has improved considerably. Fiber optic across network installed by FLL operators across Pakistan has increased from 1,429 Km in 2003-04 to 11,609 Km in 2005-06. PTCL being largest telecom FLL has laid the fiber optic of around 10,553 Km. Whereas all four operators

Figure - 34
Total Optic Fiber Length by LL Operators (2004 - 06)
(Kms)



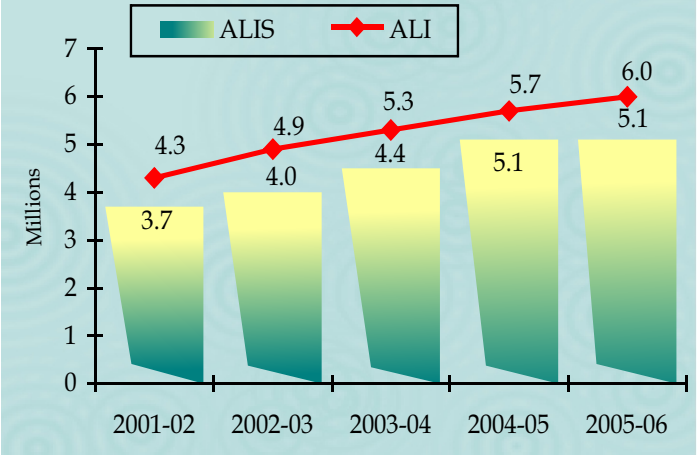
that have started their local loop operations have deployed optic fiber for provision of fixed line and other data/voice services. The total optic fiber length showed in the graph is only of fixed line operators. There are number of LDI operators including Link Direct and Wateen which are laying their own fiber optic backbone across the country.

Pakistan Telecommunication Company Limited

Pakistan Telecommunications Company Limited (PTCL) is the incumbent fixed-line telecommunications services provider in Pakistan. PTCL provides a public switched telephone network (PSTN) which provides fixed-line telecommunications services to over 98% of current residential and corporate customers served in Pakistan.

Over the last three years, the company has increased its PSTN network capacity by 20%. However, due to intense competition and better services offered by mobile and WLL, operators, the company has not been able to increase its fixed line subscriber base significantly. Particularly, during 2005-06 the subscribers growth has been almost zero. Capacity utilization of the fixed lines has also dropped from 90% to 85% during the last one year.

Figure - 35
PTCL ALI Vs ALIS
(2002 - 06) (Millions)



In order to create a competitive landscape in the telecom sector, government finally privatized PTCL and in March 2006, management control of the company was transferred to Etisalat, a UAE based company along with sale of 26% shares of the company. With the new management in place, the company is devising new business strategies keeping in view the competitive and fully deregulated environment in the country. Various initiatives have been taken to combat the tough market conditions. PTCL's new image as a customer friendly company is being projected. During the year, company introduced limited time offer of free local calls for the midnight till 6 a.m. In August 2006, company substantially reduced its national & international call charges in order to compete with the bottom low tariffs of mobile and calling card services. It is believed that investment in new technologies and provision of customer-oriented services will result in growth of the company as well as the fixed telephony in the country.

SCO is the incumbent operator for the provision of telecom services in AJ&K and NAs. SCO has been operating in the region since 1976. SCO has progressed significantly since its inception. The organization is providing local loop as well as mobile communication. In June 2006, total number of working SCO connections reached 167,241 (including fixed, WLL and mobile). SCO is utilizing 72% of its capacity for these services. Furthermore, during the last two years, the organization has almost doubled its subscriber base which has resulted in an increase in fixed line teledensity in AJ&K and NAs from 1.87% in 2003-04 to 3.71% in 2005-06. This teledensity does not include the recent surge in mobile connections provided by the mobile companies after the earthquake of October 2005. The telecom deregulation process has started in AJK and NAs with the award of mobile licenses in the region, which will be followed, by the licensing for fixed line services. The newly deregulated telecom sector of AJ&K and NAs will provide a challenging environment for SCO as earlier it was operating in a monopolistic situation. SCO has increased its optic fiber length from 82 km in 2003-04 to 1000 km in 2005-06 and is further improving its backbone media by laying 317 km optic fiber cable up to Youching. STM-1 capacity from Gilgit to Rawalpindi will also be extended. The company is also improving its billing and customer support services. These measures would hopefully improve its services.

Special Communication Organization (SCO)

Figure - 36
Fixed Line Teledensity in AJ&K and NAs (2004-06)

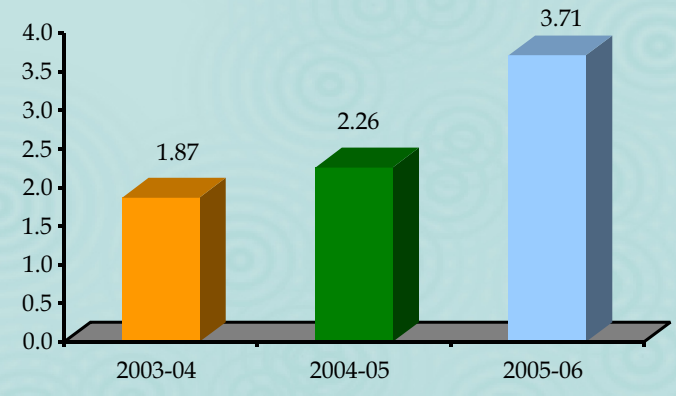
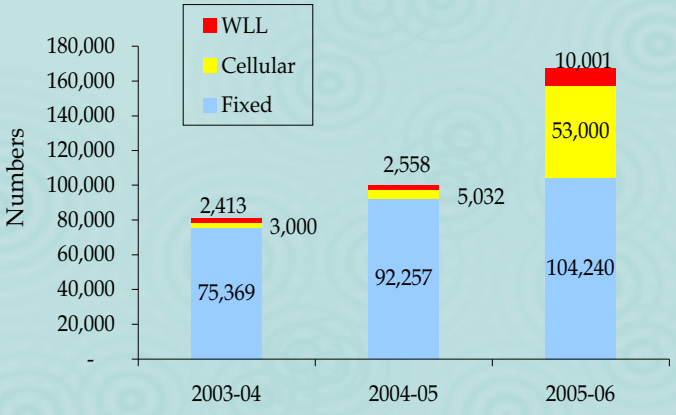


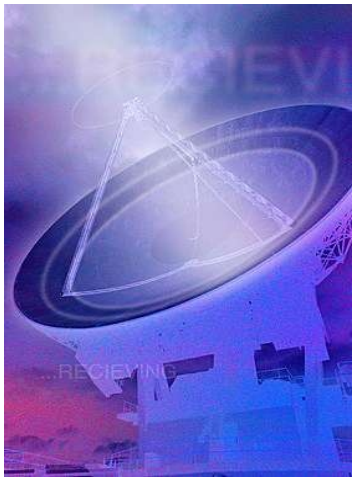
Figure - 37
SCO Fixed, WLL & Mobile Subscribers (2004-06)



Wireless Local Loop (WLL)

Wireless Local Loop services started in Pakistan in 2004 as a new segment of telecom sector after deregulation. The service was introduced with basic aim to provide telecom accessibility to rural and far-flung areas where laying of copper was difficult. Therefore, with liberalization of telecom sector of Pakistan, 17 companies were awarded WLL licenses to operate in 14 telecom regions of Pakistan.

Out of these 17 companies only 4 companies are operational and are providing services in all



four provinces of Pakistan. These four companies are Telecard, WorldCall, Great Bear and PTCL. All of these companies have local stakes except for Great Bear, which has investment from Russia. All currently operational WLL companies were already in telecom business in Pakistan before deregulation. So far they have not been able to achieve the desired level of penetration in the local markets. Currently, 36% of total population of Pakistan is covered by WLL services. Low penetration of WLL is a result of number of obstacles which include non-availability of required investment with the operators, non-availability of WLL equipment in some frequency bands, higher tariffs for low-income target market and almost no commercial campaign/ advertisement of services by WLL operators.

The WLL operators are using CDMA technology for provision of services, which is comparatively easy to deploy in rural areas and is a highly viable solution as compered to copper/optical fiber networks. Although, inspite of government decision to help the fixed line licensee by allowing them the CDMA technology with limited mobility, the operators raised issues in implementation of limited mobility in WLL. The issues raised were studied and determination for limited mobility implementation was issued by the Authority. PTA gave some relaxation to WLL operators so that once a call is setup it continues outside its home cell so QoS that is improved. Further, the Authority has given relaxation to all WLL operators till 31st August for making necessary arrangements for restricting users to one cell only, after which strict action will be taken against the operators not maintaining limited mobility.

Currently, total subscriber base of WLL services in Pakistan has reached 1,025,328 showing growth rate of more than 287% in one years. However, such high growth has hardly affected the overall growth of fixed line in the country. Looking at the division of subscribers among provinces, it is obvious that Punjab has the maximum share of subscribers, as all four operators are providing services in Punjab whereas in Balochistan, the WLL subscriber base is very low as there is not much coverage available.

Currently, WLL teledensity stands at 0.66%. This teledensity although is very low but is a

Figure - 38
Province-wise WLL Subscribers (2006)

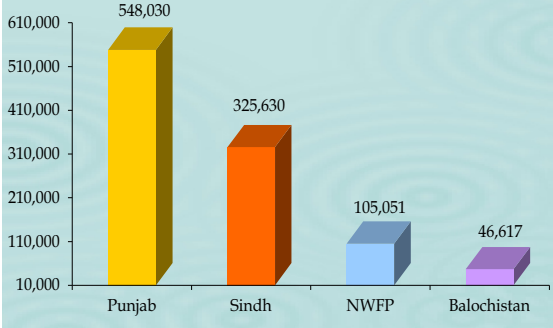
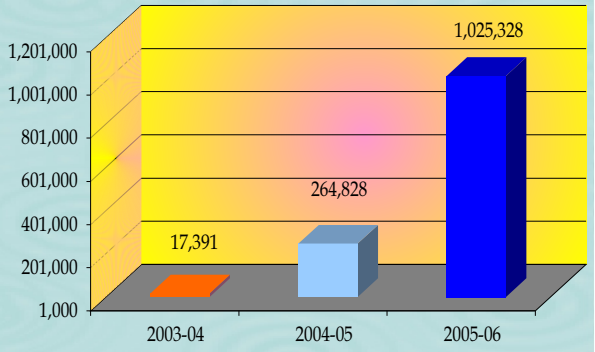
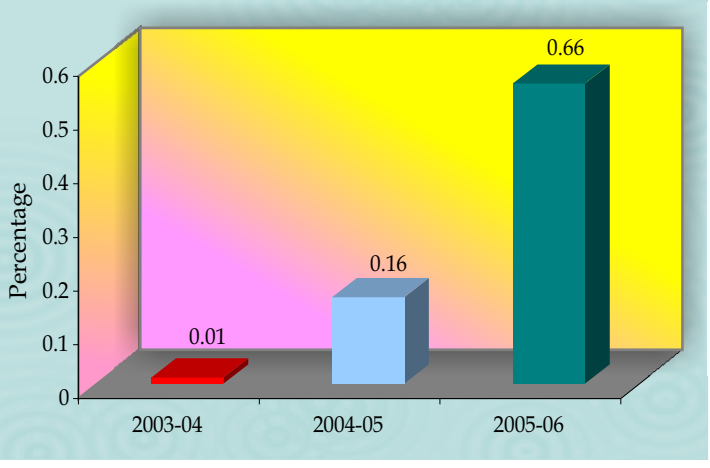


Figure - 39
Total WLL Subscribers (2004-2006)



result of only one and a half year of operation. Share of WLL density in total teledensity was almost negligible when the service was introduced in 2004 but today this share has gone up to almost 2%. Further the growth of WLL as compared to fixed line network is very high and it is expected that the share of WLL in total teledensity would further increase in the years to come.

Figure - 40
WLL Teledensity (2004-06)



Coverage

The 4 operational WLL companies have covered all 4 provinces of Pakistan except for Balochistan, which is covered only by PTCL and Telecard. Similarly, Great Bear has only covered 2 cities Islamabad and Rawalpindi.

Table - 19
WLL Cell Sites by Operator (2006)

Companies	Punjab	Sindh	NWFP	Balochistan	Total
Great Bear	19	0	0	0	19
World Call	106	4	10	0	120
Telecard	101	114	21	8	244
PTCL	419	159	88	30	696
Total	645	277	119	38	1,079

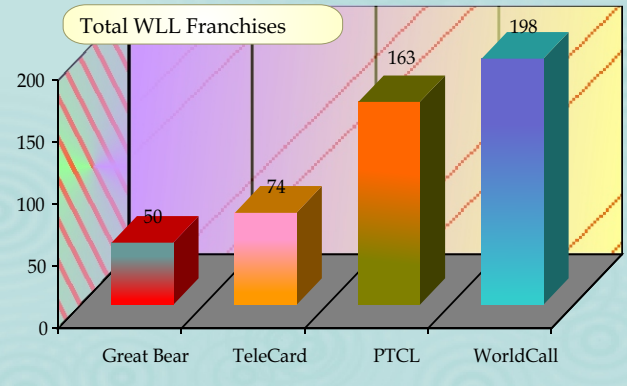
As far as cell sites are concerned, PTCL being the largest WLL operators has maximum number of WLL cell sites closing to almost 700 followed by Telecard with 244 and World Call with 120 cell sites. In terms of population coverage, WLL network is covering 36% of the population in the country. Province-wise coverage is given in Table - 20.

Table - 20
Population Coverage by WLL Services (2006)

	Percentage Coverage
Punjab	36%
Sindh	53%
Baluchistan	17%
NWFP	20%
Overall Pakistan	36%

Looking at the franchise network of WLL operators, following trends are observed. Although Worldcall has got lower subscriber base and coverage by city but franchise network of the company is quite strong with 198 franchises across three provinces of the country. PTCL has almost 163 franchises totally dedicated for sales of PTCL WLL services whereas Telecard with 2nd largest WLL market share has only 74 franchises in all four provinces of the country.

Figure - 41
WLL Franchises Operator Wise (2006)



Currently, the WLL segment does not give a very healthy picture, due to the reasons mentioned above. PTA is making utmost efforts for improvement of this segment. A number of policy decisions have been taken, however, it is expected that it will take some time for the service to penetrate effectively in the country especially in the rural areas.

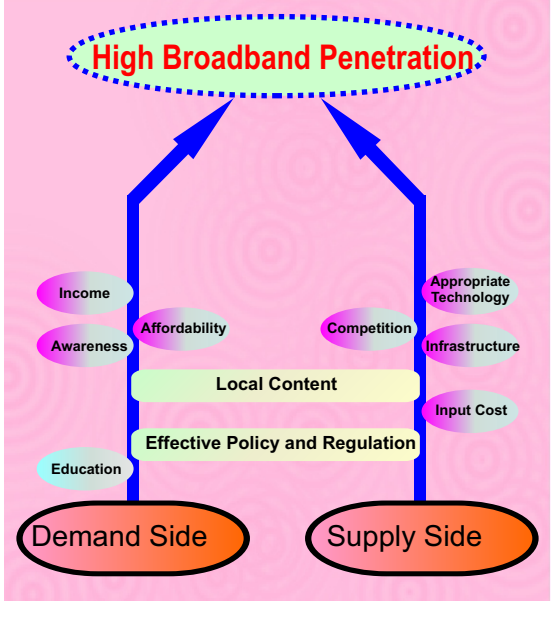
Although fixed line services, have not shown any significant growth since liberalization, it is expected that with supportive policies of Government and initiatives taken by the regulator this segment will show marked progress in the future.

7 Broadband & Value Added Services

Demand for Value Added Services (VAS) is increasing with increased use of data communication. Its usage is further expanded when such services become affordable to a common man. Ubiquitous usage of internet have changed the life style pattern of the people in the 21st Century. Broadband has been instrumental in shrinking the Planet virtually making people come closer and transformed the world into an "Information Age" era. Value Added Services have shown considerable growth in the last couple of years, however, this growth is not uniform in all its segments.

Determinants of Broadband Growth

The development of broadband services in the country depends on both the demand and supply factors. The demand depends on the affordability/cost, content, confidence and education of potential customers. Therefore, it is more likely that educated and high income groups create more demand for broadband services. However, the international trends show that demand can be created through the supply side factors as well,

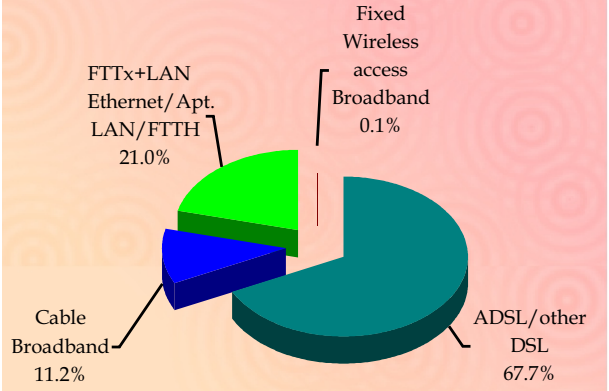


these include local content, reducing the input costs of investors, improving infrastructure, appropriate competition and regulatory policies.

Access Technologies & Its Proliferation in Asia Pacific

Broadband is the name given to a high speed Internet connection that provides large bandwidth. It is commonly an "always-on" connection and capable of transmitting data at a much faster rate than a dial-up connection. Digital Subscribers Line (DSL) and cable are widely used access technologies in the world for its service. According to International Data Corporation (IDC), out of total 210 million broadband subscribers in the world, more than 69% are DSL subscribers. Likewise, out of 90.1 million broadband subscribers in Asia Pacific, 67.7% are DSL and 11.2% are cable broadband subscribers. This is due to the easy deployment of DSL on the existing copper local loop. Fixed wireless technologies like Wimax, and satellite are attractive options for the economies where the existing infrastructure is limited. Satellite connection is a good solution for the connectivity in very remote areas however it is an expensive option.

Figure - 42
Broadband Subscribers in Asia Pacific (2006)



Source: Asia Com, June 2006

Applications

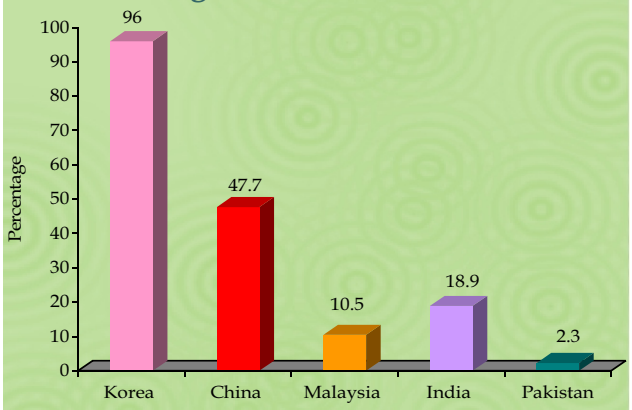
Broadband is providing a base for the convergence of computing, communications and broadcasting. The use of Broadband is not limited to one segment of the society, it is essential for corporate, commercial, individual and call centre business. Broadband technology has also enabled a range of other possibilities: online activities such as banking and shopping, downloading media, telemedicine, e-learning, multi-player games and other forms of entertainment.

Broadband Growth in Pakistan

Broadband services in Pakistan started in 2002, however, the growth remained very slow due to high tariffs, less awareness among the consumers and few service providers. To facilitate the growth of broadband services, PTA took the major initiatives in 2004 by allowing all ISPs to provide the broadband services. Government announced Broadband Policy with the objective to spread an affordable and high speed Internet, and encourage private sector investment in local content and broadband services. The policy set a target of 500,000 broadband users within five years.

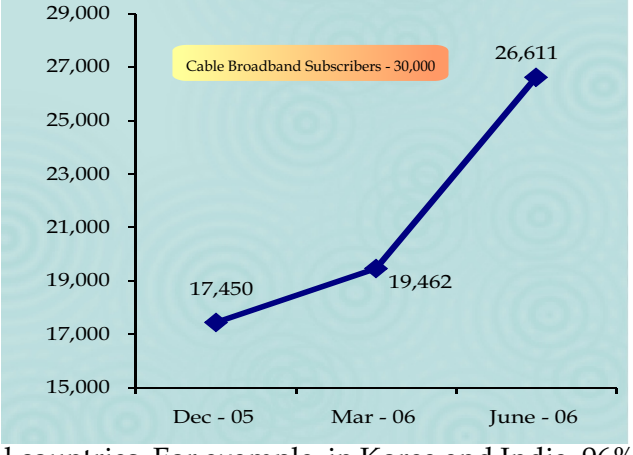
However, the broadband penetration in the country could not show a reasonable growth and there are almost 56,611 broadband subscribers (DSL, cable and wireless) in the country. Among these, 26,611 are DSL subscribers mainly provided by 13 major ISPs. The DSL services are limited to the major cities and provincial headquarters. Worldcall is the only major cable operator providing broadband services in Pakistan. Few other cable operators are also providing broadband services and during the last few months, they have started their enhanced consumer awareness campaigns. Some of the corporate customers in Pakistan are also using satellite broadband services which have very high tariffs and are mostly used by the customers which cannot avail other modes. In view of copper issues in DSL connections, it is expected that the introduction of Wimax in Pakistan will help improve the broadband penetration.

Figure - 43
Broadband Subscribers as Percentage of Internet Subscribers



Source: ISPAK and AsiaCom, June 2006

Figure - 44
DSL Subscribers in Pakistan



The broadband penetration in Pakistan is also very low as compared to other regional countries. For example, in Korea and India, 96% and 19% internet connections are respectively on broadband technologies. For Pakistan, this figure is just below 2.3%. Similarly, growth rate in the Pakistani broadband market is also slow i.e. Indian broadband subscribers are growing at quarterly growth rate of 40% whereas Pakistan's market has shown a growth of 15% over the last quarter of 2005-06.

Reasons for Low Broadband Penetration in Pakistan

PTA has been in continuous consultation with the industry to ensure that all regulatory measures are in place to enable broadband proliferation. Some issues have emerged as major impediments in the way of broadband growth in the country. Firstly, the quality of copper in Pakistan is not good and some parts of the copper are really in bad shape. DSL connections are delayed due to faulty distribution poles and cabinets, and difficulties in sharing PTCL resources like cables and ducts. Secondly, there are issues related to PTCL's local loop unbundling, transmission media, collocations, and Optic Fiber Access Network (OFAN) from PTCL. Thirdly, line rent of Rs. 250 on DSL connection charged by PTCL was also considered an extra burden on the DSL. Fourthly, there is lack of awareness among the consumers about the benefits of broadband services in terms of avoiding call charges, time saving and convenience.

Fifthly and more importantly, PTCL has the monopoly in the provision of bandwidth in Pakistan. PTCL's prices of IPLC and IP are quite high and these make a major portion of total cost of service providers. As compared to IPLC/IP/DPLC tariffs in the region PTCL's tariffs are not competitive. The tariffs offered by PTCL to ISPs for higher capacities are several times higher than similar and advanced countries e.g. PTCL was offering IPLC tariffs of US$ 3,950 as compared to India's US$ 2,462 for the same E-1 capacity. However, for higher capacity of STM-1, PTCL's tariffs were US$ 185,000 as compared to India's US$ 25,000. The multiples for higher capacities offered by PTCL were inconsistent with the international standards and thus result in competitive disadvantage. For example, the IPLC price multiples of PTCL for E1:DS3:STM-1 are 1:17:47 whereas globally these multiples normally range between 1:4:7 to 1:8:17.

Table - 21
Comparison of IPLC Tariffs (000' US$)

	Multiples	E-1 (2Mbps)	DS-3 (45 Mbps)	STM-1 (155 Mbps)
Pakistan	(1 :17:47)	4.0	67.2	185.0
Singapore	(1 : 5 : 9)	2.8	14.2	25.0
India	(1 : 8 :23)	2.5	20.0	56.7
China	(1 : 5 :11)	2.3	11.5	26.4
H.Kong	(1 : 5 :13)	2.0	10.0	25.0
Japan	(1 : 4 : 9)	1.9	8.3	16.7
Malaysia	(1 :12:29)	1.4	16.5	40.7
S.Korea	(1 : 7:14)	1.2	8.3	16.7
Average	**(1 : 6 :15)**	**2.0**	**12.7**	**29.6**

Note: PTCL is providing IPLC in Karachi, Lahore and Islamabad only

Lastly, broadband tariffs in Pakistan are quite high and not affordable for lower income groups e.g., for 256kbps DSL connection, tariffs in Pakistan are 8.4% of average monthly per capita income (PPP) whereas in Sri Lanka and India tariffs constitute around 4% of their respective incomes.

Future Broadband Market

As mentioned earlier, lack of infrastructure and high broadband tariffs are considered as the major bottlenecks for the low proliferation of broadband in Pakistan. Regulator and the government are striving to overcome these problems. PTA is continuously working to reduce the broadband tariffs through reduction in bandwidth rates and eliminating other hurdles in the way of high broadband proliferation. Furthermore, three companies Multinet, Wateen and Worldcall are deploying optical fiber networks throughout Pakistan that would help broadband growth in Pakistan. To secure international connectivity in addition to existing SEA-ME-WE-3, two more under sea cables have been laid in Pakistan, one by PTCL and the other by Transworld Associates. New technologies are also being introduced, such as Worldcall is introducing Wimax for wireless broadband. Keeping in view the possible reductions of PTCL's bandwidth rates, removal of other hurdles, and the

infrastructure buildup by the companies, it is expected that the broadband services in the country would be available widely and at affordable price in the coming years.

Internet Services

During the last couple of years, internet usage in the country has increased tremendously. The prices of Personal Computers (PCs) have decreased substantially and now more people have PCs at their homes. Therefore, cheaply available internet cards are used by the people to connect to the internet at their residences etc. Internet cards are available as low as Rs. 2.5 per hour however the internet speed is still the point of concern for the internet users. This trend of using internet cards has also slowed down the growth of net cafes in the major cities. The Internet Service Providers (ISPs) which were concentrating in Karachi, Lahore and Islamabad have now extended their services in other cities as well. Currently internet service is available in more than 2389 cities and towns in Pakistan. According to ISPAK estimates, there are more than 2.4 million internet subscribers in the country whereas internet users have reached 12 million.

Figure - 45
Internet Subscribers in Pakistan

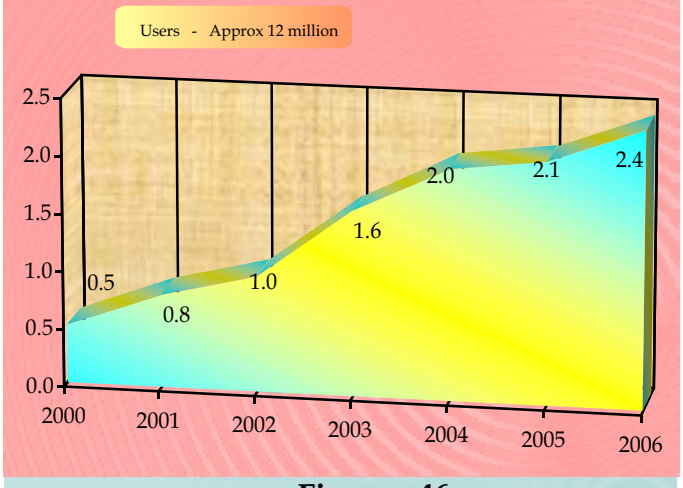
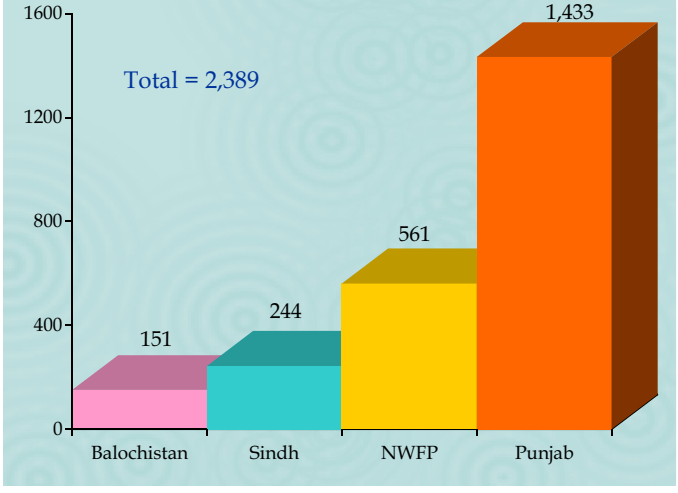


Figure - 46
Cities and Towns Connected with Internet (2005-06)



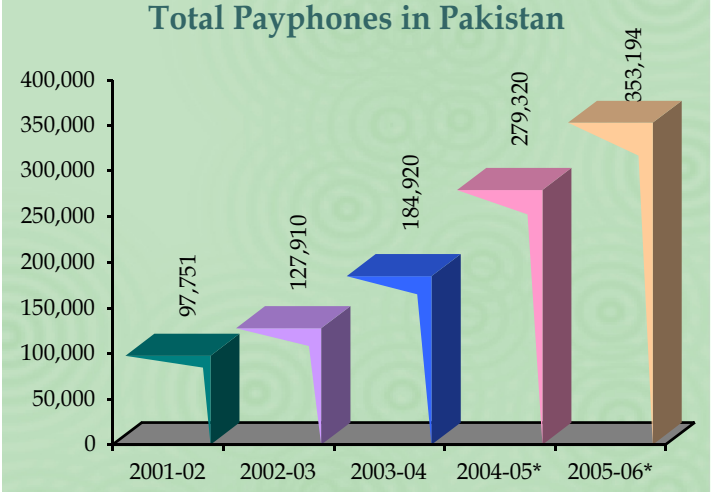
Payphones Services

Payphones provide easy access to general masses that cannot afford phone at home. The growth of this segment has been impressive over the years because use of these payphones is significant in segment of the society where other telecom services are still either not affordable or accessible.

During the last two years, there has been a significant change in the market at the back of exponential growth in WLL technology in the country. After deregulation, new players are

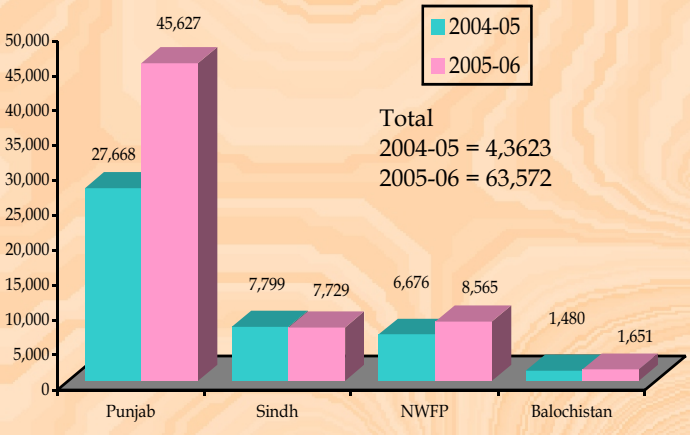
providing their service on CDMA technology at their own networks instead of using PTCL infrastructure. Telecard, the second largest WLL service provider, has widely provided the WLL payphones services in all provinces of Pakistan. Similarly, Worldcall is also expanding its WLL payphones and has major concentration in the province of Punjab. Both of these operators have above 117,000 WLL payphones. In addition, Callmate is also providing services of mobile payphones.

Figure - 47
Total Payphones in Pakistan



*Including Payphones of WLL companies

Figure - 48
Rural Payphones*



* Payphones on PTCL network

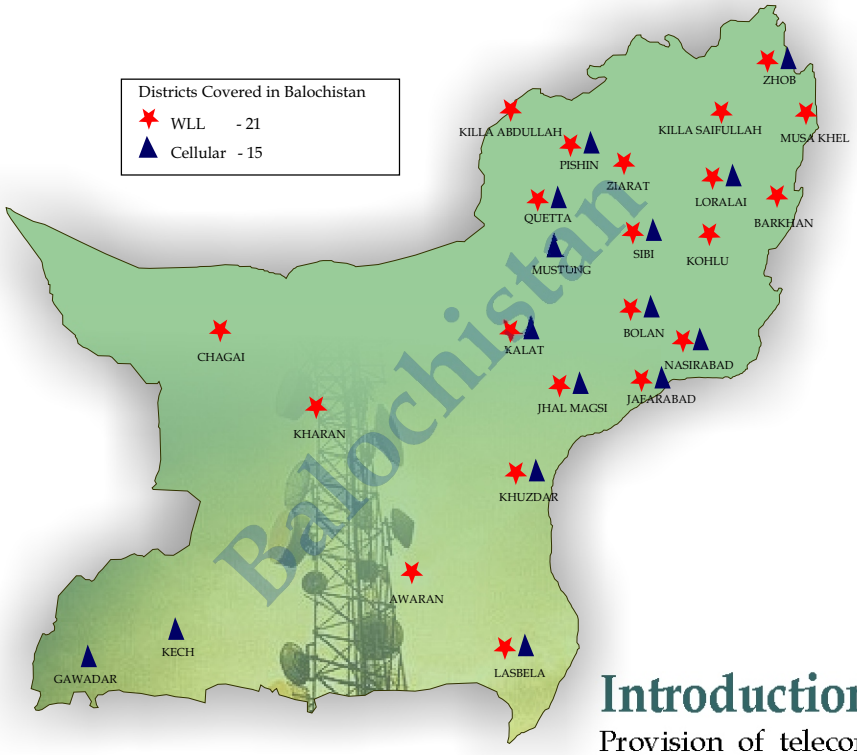
During 2005-06, PTCL payphone revenues have decreased from Rs. 9.2 billion to Rs. 6.4 billion because some LDIs shifted their operations to their own networks. The payphone industry is also facing intense competition from other services like cellular and LDI calling cards as the tariffs of these services have dropped significantly. Prepaid calling cards are available with as much low tariffs as 52 paisas per minute for nationwide and Rs. 0.99 for international calls.

In the era of competition, payphone service is moving towards the rural areas which is a healthy sign for development of telecom services in Pakistan. Currently, about 27% (63,572) payphones on PTCL network are working in rural areas of Pakistan. One third of total payphones in the provinces of Punjab and NWFP are installed in their rural areas while Sindh and Baluchistan have 13% and 20% respectively of their total payphones in their rural areas.

Conclusion

The Value Added Services are converging with the convergence of technologies and after the implementation of CVALs regime in the country. PTA is making efforts to make broadband services more affordable for common man in the country. It is expected that VAS would flourish expeditiously in the coming years.

8 Telecom in Balochistan



Introduction

Provision of telecom access to the largest province of the country has always been a challenge for the regulator due to its terrain and scattered population. Factors such as low literacy rate, less affordability and non-availability of electricity are main impediments for development of telecom in Balochistan. In addition, lack of media (DRS, Optical Fiber) by PTCL is also hampering operators' access to the far-flung areas of the province. Government took the initiative of liberalizing telecom sector of Pakistan in 2003, however, effects of liberalization were not seen in Balochistan province till 2005. The President of Pakistan visited Quetta on April 3, 2005 where he assured people of Balochistan that all their legitimate telecom demands would be fulfilled. Similarly, Chairman PTA, also made special visits to Balochistan to discuss telecom development with Government of Balochistan, Chamber of Commerce & Industry and other stakeholders. In this regard, PTA also extended large incentives to the telecom industry in Balochistan so that more operators can start their services in the province.

After declaring Balochistan as priority area by Government and PTA, total telecom coverage in the province increased tremendously. In August 2006 total 21 out of 28 Districts of Balochistan have mobile or wireless networks. The Authority is working towards making telecom access available across Balochistan.

Balochistan Statistics

Area - 347,190 Km

	Total	Telecom Coverage
Population	7.71 m	4.14 m
Districts	28	21
Tehsils	58	30

PTA Initiatives

PTA has taken major steps for the development of telecom facilities in the province in last two years. It is expected that these measures would go long way for the development of telecom in province. Following is a brief on major initiatives taken by the Authority;

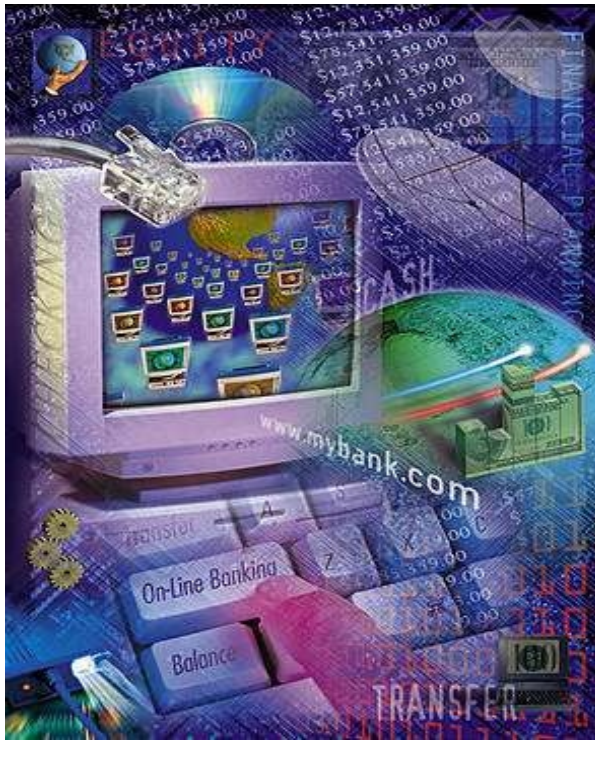
- Annual Regulatory fee of WLL licensees operating in Balochistan has been reduced from 0.5% to 0.1% for three years initially and 0.5% to 0.25% in subsequent two years.
- Annual Spectrum Fee for WLL has been reduced to 10% of the actual fee applicable under the license.
- Under the CVALS regime, the Initial License Fee (ILF) is Rs.100,000 per province, with a 50% reduction for Balochistan and non-profit organizations.
- PTA has directed all telecom operators to expand their networks in the province on priority basis and most of the cellular operators have extended their services in various cities and highways.
- Project has been prepared to establish community-based telecentres across Balochsitan, where telecom facilities will be shared instead of having dedicated facilities.
- Permission has been granted to mobile operators for establishment of mobile PCOs where fixed line telephone services are not available.
- Special instructions have been given to PTCL for provision of access along highways and other far flung areas of Balochistan, including Optical Fiber System & DRS.

Telecom Forum in Balochistan

In addition to above mentioned initiatives, PTA arranged Telecom forum in Quetta in 2005. Main objective of Telecom forum arranged in Quetta was to provide platform for the interaction of telecom consumers, private sector and Government of Balochistan with

telecom regulator for telecom development in Balochistan and for devising a strategic approach for development of telecom services in province. PTA invited all telecom operators in the forum to brief the telecom regulator about current status of their services in the province. All telecom operators made number of commitments to develop their infrastructure in Balochistan, PTA is keeping a complete follow up of those commitments. Following is a brief summary of commitments and progress so far.

- PTCL committed to lay Optical Fiber from Quetta to Chaman (STM4), 90% of the project has been completed and it is expected that by the end of 2006 the link will become operational.
- Similarly Optical Fiber from Loralai to DG Khan has also been committed by the PTCL which will become operational by June 2007. PTCL has committed to place 2.5G system in Quetta, Karachi & Shikarpur. Similarly the company has also committed Optical Fiber Access Network at Quetta & Hub with 13000 & 1000 lines respectively where 80% of the work has been completed.
- PTCL has also committed to expand its Intelligent Network (IN) and NGN in Quetta, which has boosted E1s to a total of 302 E1s and 96 E1s respectively.
- PTCL has also committed for provision of 18,552 lines on copper and work is in progress on this project. In addition for enhancing the media, the company has also committed DRS links.
- PTCL also committed to provide WLL services in far flung areas of the province, in this regard, it has covered almost 684 cities/villages/towns.
- Companies including Dancom, Burrak Net and Cyber net committed to provide DSL services in the Balochistan province. So far, Dancom has not started its services. Similarly Ufone Mobilink and Warid also committed to provide their services in some of the un-served areas of the province and now number of cities have been covered by these companies however, large number of cities are still waiting for mobile services.



Current Telecom Status in Balochistan

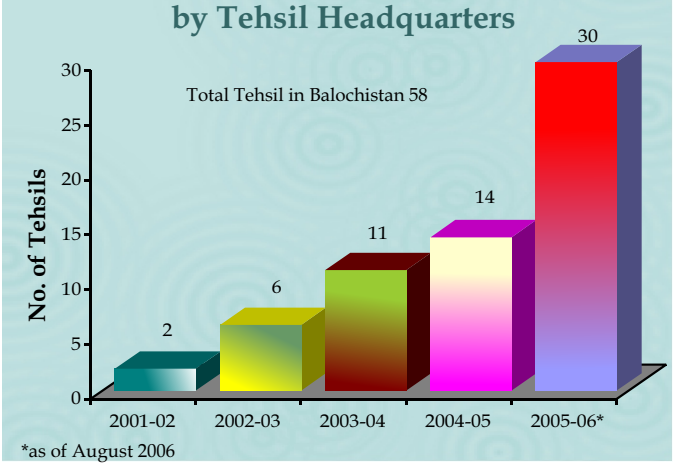
Availability of telecom services in Balochistan before deregulation was inadequate, however, after deregulation the area was marked as one of the highly potential telecom market in Pakistan. On the contrary, with such high expectations for telecom development after deregulation, the accessibility could not be increased to the desired level. This low telecom development was due to unavailability of media in far flung areas and low media

capacity made available by PTCL to accommodate more operators. PTA closely analyzing the situation has taken certain initiatives to increase the access as well as teledensity in the province. The most neglected and un-served areas are marked by PTA in Balochistan which includes Turbat, Panjgoor, Noshki, Nokundi, Taftan etc. Strategic plans have been suggested to increase the accessibility and capacity in these areas.

Coverage

Population coverage in Balochistan has increased immensely over the last two to three years. While looking at the total population of around 7.7 million in the province almost 4.14 million people have access to either Mobile or Wireless or fixed line networks which counts for total of 54% population coverage across Balochistan. Out of total 58 Tehsils in Balochistan, today 30 Tehsils are covered with telecom services whereas only 6 Tehsils were covered in 2003. PTCL being the largest operator in Pakistan, also has its network coverage in Balochistan, however, the capacity is alarmingly low. Therefore additional services to larger population cannot be accommodated. However the Mobile and WLL operators are expanding their networks at a much faster pace.

Figure - 49
Telecom Coverage in Balochistan by Tehsil Headquarters



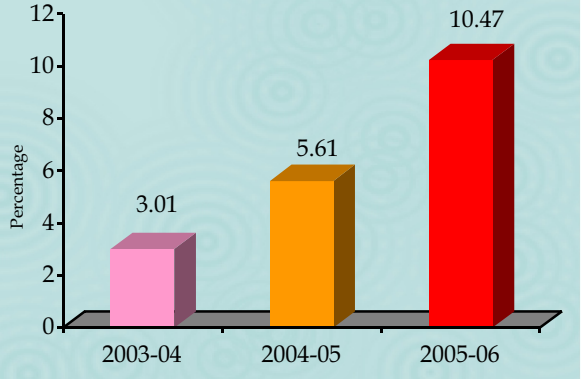
Total Teledensity

Teledensity growth in the province shows significant increase in the year 2005-06 where it increased from 5.6% to 10.47% showing growth of almost 87%. Reason behind this increase is initiatives taken by PTA and coordination that has been provided by the Authority among the operators and the Incumbent by making essential facilities available for new services and increasing capacity of current transmission facilities. Main contributor of increase in teledensity is mobile sector where mobile density is more than 8.05% in the province. Total WLL density in the province is 0.60% which was almost negligible in 2004.

Table - 22
Teledensity in Balochistan
(Percentage)

Years	Cellular	Fixed	WLL
2003-04	1.47	1.53	0.01
2004-05	3.56	1.87	0.18
2005-06	8.05	1.82	0.60

Figure - 50
Total Teledensity in Balochistan
(Fixed, WLL & Mobile)



Mobile Cellular Services

Mobile subscribers have given major boost to

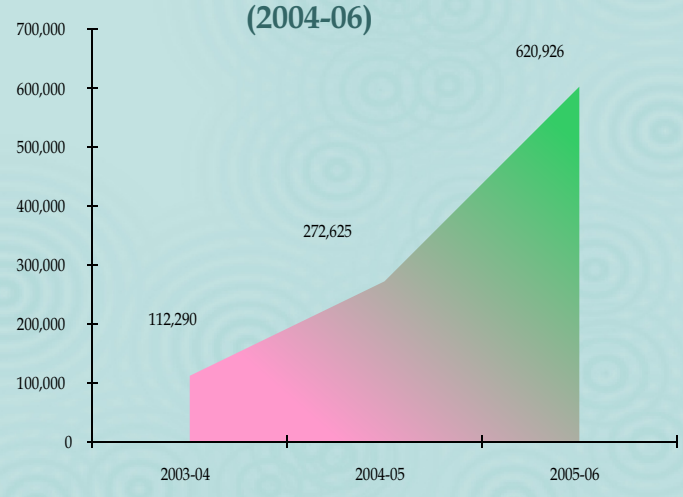
the teledensity in Balochistan. Total mobile subscribers in 2005-06 have crossed 620,926 whereas they were just 112,290 in 2003-04. All mobile operators are working in the province with Mobilink having maximum coverage in 19 cities. Total 2.65 million population of Balochistan is covered with mobile network which is around 34%of total population of the province. There are 15 districts and 18 tehsils of Balochistan which are covered by mobile operators. Mobilink and Ufone have extensive plans of increasing coverage deep in the province in 2007.

Table - 23
Mobile Coverage Statistics in Balochistan (2006)

(Numbers)

Coverage	Total
Cities	19
Tehsils	18
Districts	15

Figure - 51
Mobile Subscribers in Balochistan (2004-06)



Wireless Local Loop Services

Wireless Local Loop (WLL) services have expanded in the province at a higher rate as compared to other services, today out of total 4 operational WLL operators, 2 have presence in the province. PTCL has the maximum coverage with almost 39 cities covered in the province. Total population covered in these cities is more than 1.5 million, which comes to around 20% of total population covered by WLL services. In 2004, total WLL subscribers in Balochistan were 435 whereas today the total subscribers are more than 46,617. It is expected that WLL services would grow at larger extent in the province since it is the most suitable and cost effective solution for scattered population and larger areas. The economic conditions in the province are also not very healthy and WLL services offer connectivity at very cheap tariffs. It is therefore expected that WLL penetration would increase.

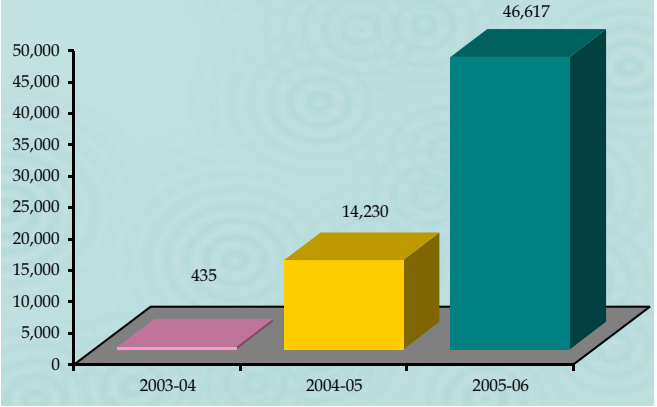
Table - 24
WLL Coverage Statistics in Balochistan (2006)*

(Numbers)

Coverage	Total
Cities	39
Tehsils	30
Districts	21

*as of August 2006

Figure - 52
WLL Subscribers in Balochistan (2004-06)

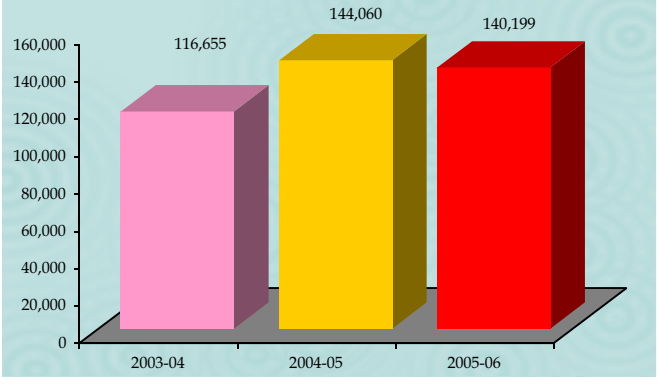


Fixed Local Loop Services

While looking at the fixed line subscribers in the province they have not increased at a higher rate, rather in

2005-06 the fixed line subscribers dropped by 5%. This drop is however, witnessed across Pakistan where fixed line number has dropped. Main reason behind this drop is churning where people are now substituting fixed line with recently available and affordable WLL and mobile services in Balochistan. Today total fixed line subscribers stand at 140,199 which were only 116,655 in 2004.

Figure - 53
Fixed Line Subscribers in Balochistan (2004-06)



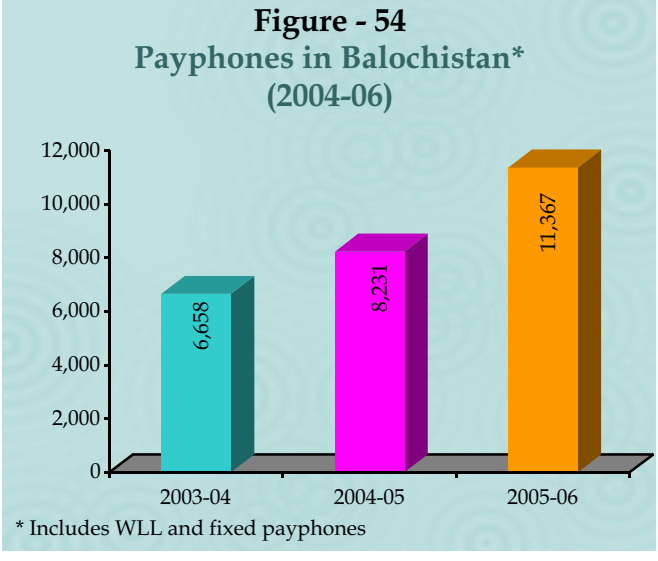
Value Added Services

Value Added Services also penetrating fast in the province and this has only been possible with the initiatives taken by PTA. With the implementation of CVALS regime there was reduction in initial license fee across Pakistan whereby further reduction of 50% in ILF has been given for Balochistan. Details of payphone and internet are as under:

Payphones

Payphones in the province have been on the rise since 2003, however, major growth has been withnessed in 2005-06 where growth rate was more than 38%. Today total payphones in Balochistan are 11,367 which include both fixed and wireless payphones. Telecard has extensively installed wireless payphones in the province which comes around 3,109.

Figure - 54
Payphones in Balochistan* (2004-06)



* Includes WLL and fixed payphones

Internet Services

There are 7 ISPs including Paknet, Buraq Net, Brain Net, Super Net, Cyber Net, GEO Information Technology and Ultranet providing Internet/Broadband services in the province. DSL services were started in 2005 by Paknet and today two more ISPs Buraq Net and Cyber Net are also providing the service. Currently 151 locations are having Internet access across Balochistan.

Future Efforts

It is expected that with above initiatives teledensity in Balochistan province will be improved and the far-flung areas of province shall be provided with telecom access. PTA is having a

follow up with all operators that have just started their services in the province and is providing every possible facilitation and assistance for deployment of their networks. Similarly PTCL is also being directed for laying of Fiber Optic at important locations and making essential facilities available to other operators. PTA also plans to give special attention to this province once policy for disbursement of Universal Service Fund is finalized.


9Way
Forward

PTA is well aware of the future challenges and continuously watching the rapid changes in technologies world over. Future challenges for Pakistan include the convergence of services, elimination of digital divide, Regulatory Challenges in Changing Telecom Environment and adoption of potential technologies for Pakistan in the new millinium.

Stepping Towards Convergent Services on Ubiquitous Networks

ICT revolution is in the process of creating a "paradigm shift" for 21st century economies. Next Generation Networks (NGNs) & Ubiquitous Networks play a vital role in this transformation. They provide the fundamental resource for transforming into a broadband information infrastructure capable of supporting next generation Converged Services. Countries with modern telecom infrastructure providing abundance of services due to convergence of networks have a much stronger foundation on which to build than those countries with limited and spread out telecom networks.

While cellular & broadband densities increase, the efforts to expand ubiquity networks i.e. communications between radio-frequency identification devices is also on the rise. Just like internet is the said to be "a network of networks" similarly this ubiquity would mean "internet of things". This business is

going to be as important and rather more widely used than the usage of mobile phones. Very soon all this will be integrated into one.

Shown below are several possibilities of horizontal and vertical convergence.

Table - 25
Convergence

	IT	Telecom	Broad - Casting	Other m e dia
Content / ser vices	Software based co ntent	Telecom based services and content	Broadcast pr ograms	Film, music, newspapers, etc.
Transport / software	Software	Network ser vices	Transmi ssion	Cinemas, video rentals, etc .
Equipment / hardware	IT hardware	Telecom equipment	Broadcast equipment	Reproduction of films, printing, etc.

Wireless Broadband, Digital Mobile & TV Broadcast, home networking, location based services, RFID services, 3G mobile, and VoIP services will all be coming together to form converged ubiquitous networks and services in the near future. In short, optical communications, mobile and consumer electronics will come to a common platform.

Developing Country Perspective

The overall technological aspects of convergence in developing countries are not significantly different from developed markets. There are certain possibilities for developing countries to leapfrog some particular stages of technical network development that developed countries have gone through. For developing countries convergence facilitates increased penetration of services in expanded networks. It facilitates more potential competition, for a range of services.

One of the main aspects of convergence is that different services can be transmitted within different networks. This can be used in developing countries to extend the penetration of basic communication services. For example, cable TV networks can be used to offer telephony and Internet services. However this possibility of reuse of infrastructure is only possible if a regulatory framework is established that facilitates the efficient utilisation of available resources in different networks. This is often not the case.For geographical regions where communication infrastructure is not available it gives more freedom in the design of the future networks because the demand for services other than telephony can be taken into account from the beginning.

In many developing countries mobile communication is seen as a replacement for fixed telephony. The development of 3G of mobile networks can be utilised to offer mobile Internet and other advanced services. This is important for the provision of 'convergence services' in developing countries as the penetration of PCs is low (and is likely to remain low due to the costs of PCs, electricity constraints, etc.) in many regions.

In many developing countries the broadcast frequencies are under-utilised. Establishing digital TV networks in these countries will give the providers the possibility to go beyond the traditional broadcast services. This is important both for regulators working to extend advanced services and for market actors that can find new business opportunities in digital broadcast services. Same is the case with Power-Line Communication (PLC) which also offers opportunities to extend ICT to un-served areas but very after utility companies are regulated by a separate regulator.

Convergence is shaped by the combination of the technological trends described above and of financial and strategic considerations, which can be independent of the convergence of the underlying technologies. There are several keys areas of convergence e.g in Content and Services, between Telecom and Broadcasting, IT and Broadcasting, Distribution, Equipment Production, or all of the above.

Ubiquitous Networks & Pakistan Scenario

Due to technological innovations, market demand and spread of ubiquitous networks around the globe convergence is taking place between telecom, IT and broadcasting. There appears to be worldwide realization at political level to promote such convergence tendencies but little seems to have been done to ensure that regulations for previously separated communication areas must at least adapt to or accommodate the new convergent environment. Whether this must also lead to regulatory convergence in terms of joining existing regulatory agencies or building a new converged regulatory organisation is a matter requiring further examination and heavily influenced by the political scenario. Although it is possible to regulate the ubiquitous converging market place by means of separate regulatory organisations, there are a number of advantages in joining them together.

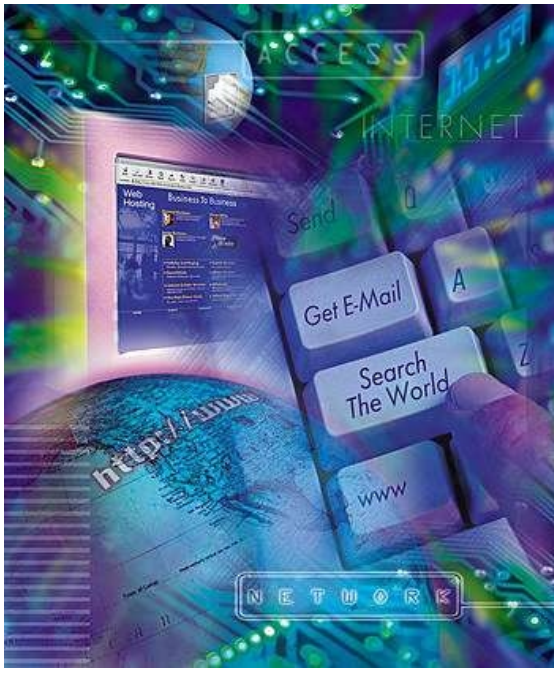
Due to liberalization of the telecom sector several LL & LDI licenses have been issued in Pakistan. Local Loop operators are determined to provide multimedia services over their NGN or shared telecom infrastructure. In a situation where technology, services and infrastructure convergence is moving at a fast pace in Pakistan the existence of two different

regulatory Authorities influenced by different ministries may constrain the growth of Network Economies and become a hurdle in developing Information Society.

Managing ubiquitous & converged services provided through Cable TV operators, DTH, IPTV, LMDS, MMDS, RFID enabled networks, home appliances and Wi-Max applications are issues which although appear to have been resolved but are hurdles in providing a clear roadmap to investors. In the meantime, PTA has introduced Simplified Class Value Added Licensed Services & Registration regime which allow value added licensees and registrants to provide a host of services under a single license. Pakistan Telecom Authority is determined to expand and assist proliferation of Wi-Max technologies and has planned a consultancy on Radio-Frequency Identification devices and networks. Similarly PTA is participating in inter-ministerial committee to amicably resolve the issuance of new spectrum bands for broadband proliferation in Pakistan.

Regulatory Challenges in Changing Telecom Environment

A regulator ensures that the law & regulations should not hinder rapid technological changes in telecom. Regulator plays a major role in resolving disputes between licensees, and adapting to the changing legislation for an effective, efficient and a well-regulated sector. To this end possible challenges in Pakistan are, Interconnection disputes, network sharing disputes, right of way issues, competition regulation, quality of service issues and protecting the interests of consumers. The way forward is to formulate regulations that would maintain a balance between consumer interests and market forces, and similarly between operators' and national interests while maintaining an oversight of the market.



Social Regulation

Universal Service Fund established under telecom deregulation policy was created with the objective of providing access to telecommunication services to people in un-served, under-served, rural and remote areas. The Ministry of IT & Telecom is finalizing the USF policy. PTA is making itself ready for the implementation of USF policy to achieve the set objectives.

Competition Regulation

While regulating SMPs PTA has to ensure that there are no delays or denial of interconnection and collocation facilities to new operators, reasonable and affordable tariffs being charged by SMP's and privatized PTCL. Eliminate predatory prices cross subsidization and discriminatory prices. In Pursuance to the Deregulation Policy and the Act, the Federal Government is in the process of finalizing Anti-competition Rules. PTA as a Regulator shall implement the rules

prohibiting such practices. PTA plans to make flexible regulations to promote competition with an eye on the macro approach.

Consumer Protection

The development of consumer protection regulations are necessary to ensure that when dealing with telecommunications operators, the rights of consumers are protected. PTA has prepared the draft Consumer Protection Regulations, 2006, which have been circulated for comments of stakeholders, which shall be approved and notified in the near future.

Technical Regulation

Under the telecom law, interconnection among operators is essential. The terms and conditions of interconnection between the networks therefore shall have an important role in promoting competition in the sector. To handle interconnection dispute regulators PTA has developed interconnection Dispute Regulations, 2004. In addition to this Facility sharing ,and Co-location issues may also arise when the SMPs and privatized PTCL hinder access to new operators to their already established facilities. PTA will continue to ensure access to operators, to facilitate the new entrants to operate as per their business plans as licensed by PTA.

Quality of Service

The quality of service on telecom networks in Pakistan is not up to the same standards as in the west. In this regard, the regulator's responsibility is to establish quality of service (QoS) guidelines or parameters, as well as the methods and procedures for monitoring operators' performance against these established parameters. The fundamental objective in establishing QoS targets and reporting is to ensure that the general public (i.e., the consumer) is well served and, at the same time, that the operator is not impeded from carrying out day-to-day operations. The quality of service parameters are defined as license conditions of each operator and also in the regulations. In this regard PTA is working to procure state of the art equipment for conducting QOS surveys and to establish QOS parameters in accordance with standards prescribed by the ITU.

Potential Broadband Technologies, World Practices and Trends

Telecommunication technologies are continuously under going rapid developments. Globally markets are adopting advanced FTTx in the residential broadband markets. At present, technology and standards are at a level where the valuable twisted pair network can be upgraded with a fiber-based switched FTTC system resulting in a ubiquitous, cost-effective, manageable and uniform full service network.

Both developing and developed countries are widely using DSL/ADSL technologies. Around 67% of the world broadband subscribers are using DSL technologies and there has been a

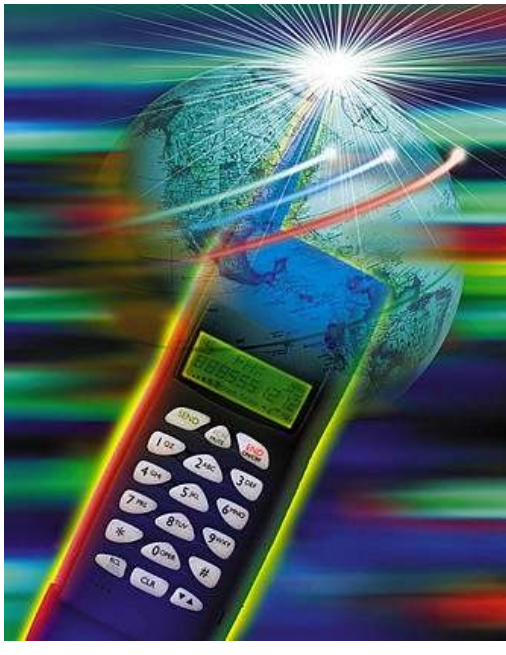
significant growth in DSL subscriptions in the year 2005. This growth portrays the essentiality of broadband DSL to the average family, student and business. ADSL is literally transforming the existing public information network from one limited to voice, text and low resolution graphics to a powerful, ubiquitous system and will play a crucial role over the next ten or more years by bringing movies, television, video catalogs, remote CD-ROMs, corporate LANs, and the Internet into homes and small businesses, ADSL will make these markets viable and profitable, for telephone companies and application suppliers alike.

3G, WiMax & Beyond

Whenever the term mobile wireless apart from fixed wireless and portable wireless is focused, 3G comes into mind. All time connectivity at all places is a key characteristic of 3G technologies.

There is an increasing need for additional network capacity and bandwidth with the widespread growth of MMS, imaging and other data services. Challenges faced by 3G services is competition from other high-speed wireless technologies, especially mobile WiMax, and ability to roam between different kinds of wireless networks. WiMAX provides fixed, nomadic, portable and mobile wireless broadband connectivity upto 40 Mbps per channel without the need for direct line-of-sight with a base station. Mobile network deployments are expected to provide up to 15 Mbps of capacity within a typical cell radius deployment of up to three kilometers.

4G: Changing the Wireless Value Chain



"4G" is an environment where radio access methods will be able to interoperate to provide communications sessions that can seamlessly "hand-off". 4G technologies support transmission rate of 100S Mb/s. 4G technologies and markets are now evolving and compared to any other technology, this will have a major impact on the entire wireless landscape and the total value chain.

4G wireless broadband network will use newer version of mobile WiMAX IEEE 802.16e technology standard. The growing demand for mobile content and the handset's emerging role as a media channel will pave the way for a faster deployment of 3G and HSDPA/HSUPA.

Pakistan Mobile Broadband

It is evident from the above that broadband technologies are becoming very popular across the world. Wireless technologies due to rapid development and cost effectiveness are replacing copper and fiber. The 3G mobile technology has already reached to its maturity in the developed world and the users are able to access services such as video telephony/video conferencing etc. through broadband networks.

WiMax as a revolutionary development in the broadband services enables users to access all kind of broadband services including IPTV, Video on demand, video telephony and conferencing etc.

Nayatel has been actively deploying its infrastructure in Islamabad and Wateen is planning to introduce WiMax at national level. Some other companies having spectrum in 3.5 GHz band are planning to introduce WiMax.Statistics prove that Pakistan has good potential for growth of wireless broadband networks. At the moment, there are six (6) mobile operators at national level covering more than 54% population whereas 4 out of 17 WLL operators are covering more than 37% of population. Most of them are providing services using latest technology. Cellular Mobile subscribers growth rate which was 108% in 2004 has now reached to 170% in 2006. Tremendous growth in traffic i.e. 275% has also been seen in last three years. In 2006 only, increase in traffic is observed as 108% whereas increase in SMS is 116%. Continuous reduction in tariff is encouraging the users to become addict of telecom and broadband services.

Though lack of spectrum, contents and business/e-commerce/m-commerce environment are major issues/hurdles besides the cost in the growth of broadband technology, the regulatory environment for the broadband is highly favorable. Availability of the frequency spectrum will play of key role in the development of broadband networks. FAB is being pursued by PTA for the increase in efforts ensuring availability of required frequency bands for wireless broadband technologies so that investors are attracted and growth of broadband networks in the country is enhanced.

Digital Divide

Shaping the Market

"Digital divide" is the division between those who have access to ICT and are using it effectively, and those who do not. Telecom facilities are mainly concentrated in the urban areas resulting in a huge disparity between urban and rural populace. The total population of Pakistan stands at approx. 155 million. According to an estimate about 69% of the population resides in rural Pakistan, which is approx. 107 million, while only 31% of the entire population concentrates in the urban centers. The true scale of the concern of urban - rural access gap can be understood by comparing the Teledensity (fixed and mobile) between urban and rural areas.

Role of Private Sector

The private sector can play the pivotal role in bridging the digital divide through efficient network expansion and providing cost effective services to the under and un-served areas at low profit margins. Recent technological developments have reduced the costs involved both of the network as well as on the terminal side considerably thus facilitating the network expansion.

Public and Private Partnership

Public private partnerships can and in fact have played a very important role in providing various telecom services in far-flung areas. There are many examples of public private partnerships globally. Such Joint Ventures can also be replicated in Pakistan where various government establishments in rural areas related to health, education etc. can be utilized for establishing telecom facilities under one roof. Some Public Private partnerships have already started to emerge in Pakistan like Pakistan Post and Callmate TELIPS for the establishment of PCOs, and Pakistan Post and Ufone for providing various solutions through cellular mobile platform.

Market Potential

The potential in rural markets is huge although different from urban areas. Rural population is expected to spend approx. the same percentage of their income as the urban population, as the use of telecom services provides relief to the communities in a number of ways which will save cost and time for them. The telecom facilities are also seen to increase the livelihood of rural people and people in low income brackets. In other words, rural and urban Average Revenue per User (ARPU) and Average Margin per User (AMPU) are expected to be more or less equal.

Barriers to Growth

The digital divide is not only due to poor telecom infrastructure but is also due to a number of other reasons. The major factors contributing towards digital divide are low literacy rates, lower per capita income, lack of awareness, lack of content in local languages, high bandwidth prices, lack of infrastructure, high terminal prices including personal computers.

Catalysts for Growth

The catalysts for growth are basically removing the barriers discussed above. Moreover, one more important aspect, which can play a key role in the development of network expansion, is the incumbent's support to the new comers. A good Reference Interconnection Offer from the incumbent makes the availability of services and application more readable.

Pakistan's ICT Development

The deregulation of the telecom sector has played a key role in ICT development in Pakistan. This is mainly due to the introduction of competition in all segments of the telecom sector that resulted in network expansion, increased customer choice, improved bandwidths and low tariffs.

Universal Service Fund

As per the Telecom Policy (2003), USF is a contribution from all operators and is limited to a maximum of 1.5% of gross revenue. It will be used to finance the expansion of basic services (including access to the internet), both on individual and community basis.

Telecentres

Community-based Telecenters are a strategically vital response to the lack of access to information and communications technologies and services due to their low cost and shared utilization by communities.

PTA's Efforts Towards Establishment of Telecentres

In order to facilitate the development of rural telephony, PTA is taking various steps and encouraging mobilization of various resources through public private partnerships/assistance. The World Bank is also considering to provide substantial funds for the establishment of Telecentres in rural areas through the Universal Service framework. PTA is planning to formally launch the Rural Telephony Project in September 2006. Some of the activities being undertaken by PTA in this regard are:

- Encouraging banks to provide micro credit loans for setting up PCOs & Telecentre. NBP, ZTBL and First Women Bank Ltd have agreed to provide micro credit loans to individuals for setting up PCOs and Telecentres.
- Ministry of Health and Education were approached for assistance. Ministry of Health has issued directives to all provincial health departments to allow establishment of Telecentres in health related establishments in rural areas.
- PTA has approached vendors to offer SOHO (small office home office) equipment at subsidized rates.
- PTA has coordinated with Local Governments / Nazims for providing space, identifying interested parties, providing funding and other resources in rural areas.

Annexes

Annex - 1

PTA Accounts

PAKISTAN TELECOMMUNICATION AUTHORITY

BALANCE SHEET

AS AT JUNE 30, 2006

	Note	2006 Rupees	2005 Rupees
PAKISTAN TELECOMMUNICATION AUTHORITY FUND	5	20,251,108,354	12,372,930,215
CONTRIBUTION TO FEDERAL CONSOLIDATED FUND	6	(35,075,217,516)	(30,198,450,081)
		(14,824,109,162)	(17,825,519,867)
DEFERRED INCOME	7	72,400,078,799	75,152,505,561
DEFERRED LIABILITIES	8	23,820,851	56,943,960
CURRENT LIABILITIES			
Due to Federal Government	9	3,326,119,722	10,245,774,914
Due to Government of Azad Jammu & Kashmir	6	602,400,000	-
Universal Service Fund and Reseach & Development Fund	10	6,172,894,176	-
Advance fee		6,699,658	40,210,000
Accrued and other liabilities	11	7,075,848	33,712,947
		10,115,189,404	10,319,697,861
CONTINGENCIES AND COMMITMENTS	12		
		67,714,979,892	**67,703,627,515**

	Note	2006 Rupees	2005 Rupees
OPERATING FIXED ASSETS	13	356,659,602	301,095,298
CAPITAL WORK-IN-PROGRESS	14	5,921,195	-
LONG TERM ADVANCES TO EMPLOYEES	15	22,092,417	14,032,483
INITIAL LICENSE FEE RECEIVABLE	16	46,076,555,000	46,003,353,250
LONG TERM INVESTMENTS	17	22,800,000	22,800,000
CURRENT ASSETS			
Fee receivable	18	8,495,530,527	8,311,975,119
Universal Service Fund and Research & Development Fund Receivable		4,760,760,894	-
Advances, prepayments and other receivables	19	108,579,744	170,152,492
Cash and bank balances	20	7,866,080,513	12,880,218,874
		21,230,951,678	21,362,346,485
		67,714,979,892	**67,703,627,515**

AUDITORS' REPORT ANNEXED

The annexed notes 1 to 27 form an integral part of these financial statements.

Member (Finance) **Chairman**

PAKISTAN TELECOMMUNICATION AUTHORITY

INCOME AND EXPENDITURE ACCOUNT

FOR THE YEAR ENDED JUNE 30, 2006

	Note	2006 Rupees	2005 Rupees
INCOME			
Annual license fee	**21**	1,950,489,751	914,510,762
Initial license fee	**7**	5,211,753,263	5,530,437,540
Other fees		219,733,949	19,697,462
		7,381,976,963	6,464,645,764
EXPENDITURE			
Salaries, allowances and staff expenses	**22**	147,719,651	114,964,882
General overheads	**23**	93,988,155	172,176,926
Depreciation / Amortization	**13**	32,641,893	27,638,812
Audit fee		150,000	120,000
Financial charges		1,883,212	843,209
		276,382,911	315,743,829
Operating surplus		7,105,594,052	6,148,901,935
Other income	**24**	772,162,627	855,019,211
Surplus for the year		7,877,756,679	7,003,921,146
Accumulated surplus brought forward		12,292,153,326	5,288,232,180
Accumulated surplus carried forward to Pakistan Telecommunication Authority Fund	**5**	20,169,910,005	12,292,153,326

The annexed notes 1 to 27 form an integral part of these financial statements.

Member (Finance) **Chairman**

PAKISTAN TELECOMMUNICATION AUTHORITY

CASH FLOW STATEMENT

FOR THE YEAR ENDED JUNE 30, 2006

	2006 Rupees	2005 Rupees
CASH FLOWS FROM OPERATING ACTIVITIES		
Surplus for the year	7,877,756,679	7,003,921,146
Adjustments for :		
Depreciation	32,641,893	27,638,812
Exchange gain	(572,152,838)	(642,350,045)
Gain on sale of fixed assets	(1,060,765)	(1,061,104)
Amortization of initial license fee	(5,211,753,263)	(5,530,437,540)
Profit on investment and bank deposits	(144,682,299)	(204,333,220)
Provision for doubtful advances	(137,817)	471,357
Provision for gratuity	48,226,738	5,026,738
Financial charges	1,883,212	843,209
Surplus before working capital changes	2,030,721,540	659,719,353
Working capital changes:		
Increase in fee receivable	(183,555,408)	(8,252,898,731)
(Decrease) in advances, prepayments and other receivables	2,986,190	8,719,568
(Decrease) in advance fee	(33,510,342)	(1,638,152,790)
(Decrease) in accrued and other liabilities	(28,089,950)	(835,164)
(Decrease)/Increase in deferred liabilities	(79,535,277)	6,140,476
Cash generated from / (used in) operations	1,709,016,753	(9,217,307,288)
Gratuity paid	(1,600,000)	(288,000)
Pension paid	(214,570)	(231,284)
Financial charges paid	(430,361)	(14,420)
Net cash generated from / (used in) operating activities	1,706,771,822	(9,217,840,992)
CASH FLOWS FROM INVESTING ACTIVITIES		
Capital expenditure	(94,160,362)	(65,932,317)
Proceeds from sale of fixed assets	1,093,735	1,351,699
Profit received on investment and bank deposits	203,268,857	102,560,049
Initial license fee received	2,958,699,049	20,599,260,287
Contribution to Federal Government consolidated fund	(11,194,022,627)	(17,925,608,494)
Universal Service and Research & Development Fund	1,412,133,282	-
Long term advances to employees	(7,922,117)	(8,241,572)
Short term investments en-cashed	-	18,650,165,254
Net cash (used in) / generated from investing activities	(6,720,910,183)	21,353,554,906
CASH FLOWS FROM FINANCING ACTIVITIES		
Loan from World Bank	-	30,776,889
Net cash (decrease) / increase in cash and cash equivalents	(5,014,138,361)	12,166,490,803
Cash and cash equivalents at beginning of the year	12,880,218,874	713,728,071
Cash and cash equivalents at end of the year	**7,866,080,513**	**12,880,218,874**

The annexed notes 1 to 27 form an integral part of these financial statements.

Member (Finance) **Chairman**

Annex - 2

Total Teledensity

(%)

	Fixed	WLL	Mobile	Total
1999-00	2.18	-	0.22	2.40
2000-01	2.28	-	0.52	2.80
2001-02	2.49	-	1.16	3.65
2002-03	2.70	-	1.61	4.31
2003-04	2.95	-	3.29	6.24
2004-05	3.43	0.17	8.30	11.89
2005-06	3.37	0.66	22.16	26.19
July 2006	3.37	0.72	23.67	27.76

Annex - 3

FDI in Telecom Sector

(US$ million)

	Total FDI	FDI in Telecom	Telecom Share (%)
2001-02	484.7	6.1	1.3
2002-03	798.0	13.5	1.7
2003-04	949.4	207.1	21.8
2004-05	1,524.0	494.4	32.4
2005-06	3,521.0	1,905.1	54.1

Source: State Bank of Pakistan

Annex - 4

Total Telecom Revenues

(Rs. million)

Service/Company	2003-04	2004-05	2005-06
Cellular	27,840	48,880	90,057
PTCL & NTC	78,356	79,658	71,581
LDI/LL/WLL	1,336	5,536	17,160
VAS	10,056	12,570	13,827
Grand Total	**117,588**	**146,645**	**192,626**

** PTCL Data for the year 2005-06 estimated based on 9 months data while NTC data estimated based on average of last two years*

Annex - 5

Summary of the Investigation Activities (2005-06)

	PTCL	CMTs	LLs	WLLs	LDIs	ISPs	CPP Operators	CPP (PCOs)	Others
Commencement Inspections	-	45	4	15	77	-	-	-	**1,421**
Survey	-	2	-	-	-	1	-	-	**3**
Inspections	133	28	-	6	46	94	155	697	**1,1689**
Complaints Received	972	235	2	27	22	34	245	-	**158,245**
Complaints Resolved	880	205	2	20	20	27	216	-	**141,141**
Court Cases	-	-	-	-	-	-	6	-	**7,569**
Hearings	12	1	-	-	-	6	24	-	**43**
Fines Imposed	-	-	-	-	-	-	-	296	**296**
Raids	-	-	-	-	-	-	-	-	**9**

Annex - 6

Analysis of QoS Survey of ISPs

Analysis of survey results is based on the following criteria:

Good	marks obtained 80% or more
Average	marks obtained 70% or more
Poor	marks obtained less than 70%

Punjab Zone

S.#	City Name	Inspections	Good	Average	Poor
1	Lahore	19	6	6	7
2	Gujranwala	9	8	1	-
3	Gujrat	5	2	2	1
4	Sahiwal	4	1	2	1
5	Sheikhupura	4	2	-	2
6	Silakot	9	4	4	1
7	Faisalabad	10	6	2	2
8	Sargodha	5	2	2	1
9	Toba Tek Singh	3	1	2	-
10	Jhang	2	2	-	-
11	Burewala	5	1	2	2
12	Rahim Yar Khan	4	1	2	1
13	Multan	7	6	-	1
14	D. G. Khan	3	2	1	-
15	Bahawalpur	3	3	-	-
	Total	**92**	**47**	**26**	**19**
	Percentage	**(100%)**	**(51%)**	**(28%)**	**(21%)**

Central Zone

S.#	City Name	Inspections	Good	Average	Poor
1	Islamabad	13	10	1	2
2	Rawalpidi	8	-	7	1
3	Jhelum	5	3	1	1
4	Chikwal	5	-	4	1
5	Gujar Khan	3	3	-	-
6	Attock	3	-	-	3
7	Muree	2	-	1	1
	Total	**39**	**16**	**14**	**9**
	Percentage	**(100%)**	**(41%)**	**(36%)**	**(23%)**

Analysis of QoS Survey of ISPs

Sindh Zone (Cont.)

S.#	City Name	Inspections	Good	Average	Poor
1	Karachi	19	9	9	1
2	Hyderabad	5	-	3	2
3	Badin	5	2	3	-
4	Mirpurkhas	5	5	-	-
5	Sanghar	5	2	3	-
6	Mithi	5	1	3	1
7	Thata	19	4	10	5
8	UmerKot	5	2	3	-
9	Ghotki	3	-	2	1
10	Jacoabad	3	1	1	1
11	Khairpure	3	-	1	2
12	Nawabshah	5	2	3	-
13	Sukkur	3	-	1	2
14	Naushahro feroze	5	4	1	-
15	Shikarpure	3	-	1	2
16	Larkana	4	-	2	2
	Total	**97**	**32**	**46**	**19**
	Percentage	**(100%)**	**(33%)**	**(47%)**	**(20%)**

NWFP Zone

S.#	City Name	Inspections	Good	Average	Poor
1	Peshawar	8	3	3	2
2	Mardan	4	-	3	1
3	Abbottabad	4	3	1	-
4	Kohat	3	-	2	1
5	D.I. Khan	2	1	-	1
	Total	**21**	**7**	**9**	**5**
	Percentage	**(100%)**	**(33%)**	**(43%)**	**(24%)**

Analysis of QoS Survey of ISPs (Cont.)

Balochistan Zone

S.#	City Name	Inspections	Good	Average	Poor
1	Ziarat	6	6	-	-
2	Chaman	6	4	2	-
3	Quetta	7	6	1	-
4	Loralai	6	3	2	1
5	Zhob	6	5	-	1
6	Pishin	6	3	1	2
7	Sibi	6	3	2	1
	Total	**43**	**30**	**8**	**5**
	Percentage	**(100%)**	**(70%)**	**(18%)**	**(12%)**

Annex - 7

International Calling Card Tariffs

(Rs. per minute)

			Jun 2005	Dec 2005	Jun 2006	Decrease(-)/Increase(+) from Jun 05 - Jun 06 (%)
PTCL		Min.	20.7	10.35	10.35	-50.0
		Max.	20.7	20.7	20.7	0.0
WorldCall	**Hello 1**	Min.	20.7	3.44	2	-90.3
		Max.	20.7	19.53	20	- 3.4
DV Com	**Big Time**	Min.	5.74	5.74	5.74	0.0
		Max.	20.69	20.69	20.69	0.0
Callmate	**Telips**	Min.	5.22	3.63	2.48	-52.5
		Max.	21.17	35.89	23.09	9.1
Dancom	**Call Points**	Min.	5.74	3	2	-65.2
		Max.	13.79	13.83	15.21	10.3
CircleNet	**Bell Phone**	Min.	-	5.18	5.18	-
		Max.	-	18.98	18.98	-
Burraq	**Combo**	Min.	-	3.64	3.64	-
		Max.	-	20.33	20.33	-

Annex - 8

Fixed Line Teledensity
Rural - Urbal 2004-06

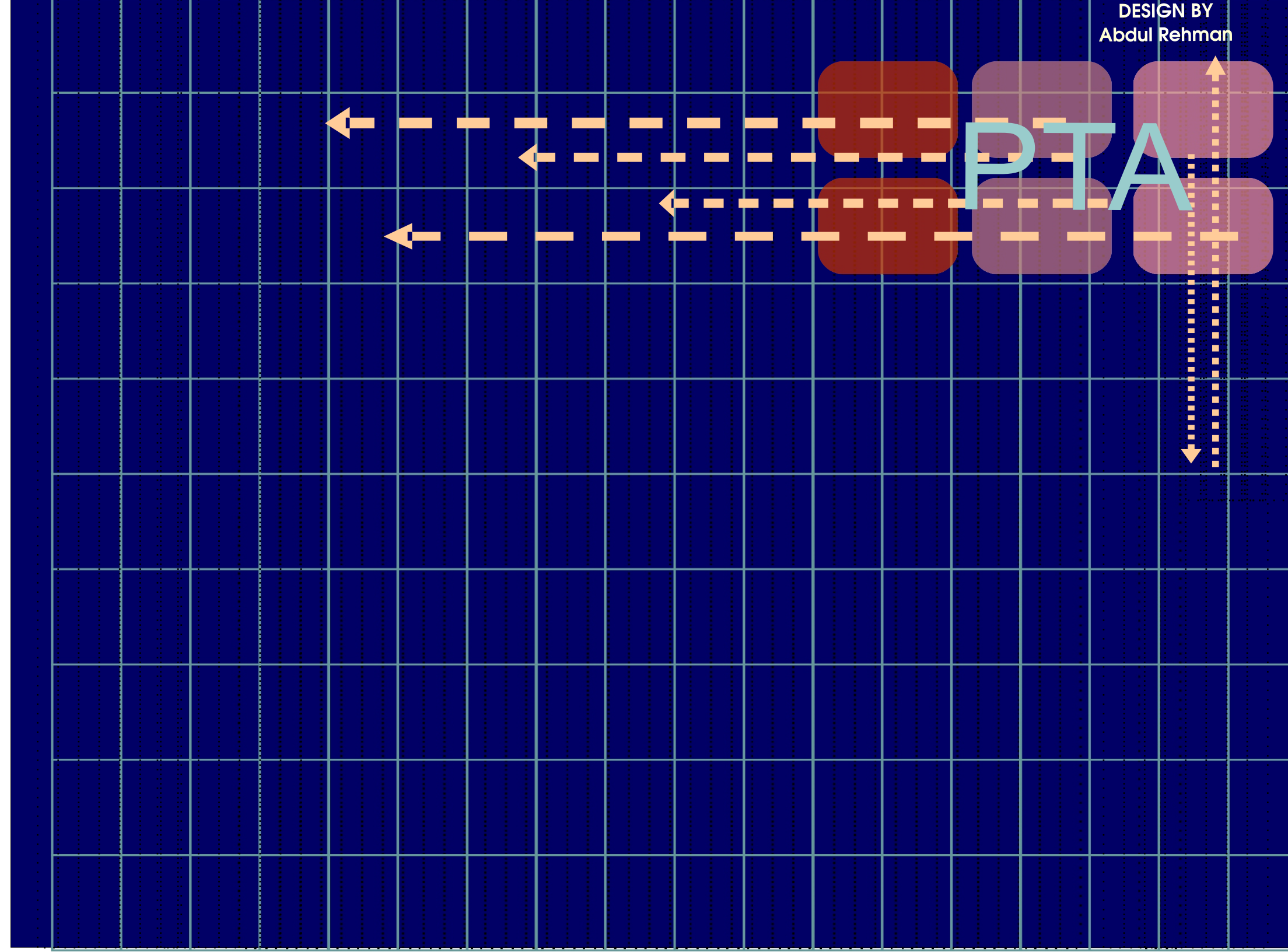
	Area	2003-04	2004-05	2005-06
Punjab	Rural	1.3	1.4	1.4
	Urban	6.7	7.8	8.0
	Total	3.0	3.5	3.4
Sindh	Rural	2.0	2.2	2.2
	Urban	5.1	5.9	6.0
	Total	3.5	4.0	4.0
NWFP	Rural	0.8	0.9	0.9
	Urban	11.0	13.1	11.6
	Total	2.3	2.7	2.7
Balochistan	Rural	0.4	0.5	0.4
	Urban	5.2	6.4	6.2
	Total	1.5	1.9	1.8
Pakistan	Rural	1.3	1.4	1.4
	Urban	6.4	7.5	7.6
	Total	3.0	3.4	3.4

Annex - 9

Broadband Indicators (2006)
A Comparative Picture

Parameters	Korea	China	Malaysia	India	Pakistan
No. of Broadband Subscribers (millions)	32.54	53.00	1.05	1.41	0.06
No. of internet subscribers (millions)	33.90	111.00	10.04	7.50	2.40
Broadband Penetration per 100 inhabitants (%)	64.27	4.06	4.38	0.13	0.03
Internet Penetration (%) per 100 inhabitants	67.0	8.5	41.9	0.7	1.5
Broadband subscribers as percentage of Internet Subscribers (%)	96.0	47.7	10.5	18.9	2.3

Source: ISPAK and Asia Com


DESIGN BY
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