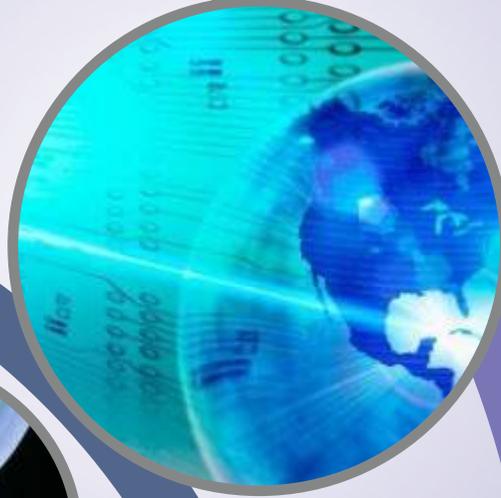




**Pakistan
Telecommunication
Authority**

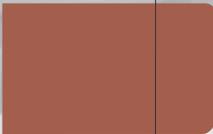


2011
Annual Report

A large, modern, multi-story building with a distinctive architectural style featuring prominent, rounded balconies and a facade of large windows. The building is the headquarters of the Pakistan Telecommunication Authority (PTA). The name "PAKISTAN TELECOM AUTHORITY" is visible on a sign along the top edge of the building.

PTA Vision

To create fair regulatory regime to promote investment, encourage competition, protect consumer interest and ensure high quality ICT services in Pakistan

 **2011**
Annual Report

Pakistan Telecommunication Authority



ANNUAL REPORT 2011

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Published by

Pakistan Telecommunication Authority
Headquarters, F-5/1,
Islamabad, Pakistan
Website : www.pta.gov.pk

Cataloging-in-Publication Data

Pakistan Telecommunication Authority
PTA Annual Report 2010-11
ISBN: 978-969-8667-51-
1. Pakistan Telecommunication Authority - Annual Report 2010-11
I. Title

International Standards Book Number: ISBN: 978-969-8667-51-1

www.pta.gov.pk



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Abbreviations

AJK	Azad Jammu & Kashmir
ALU	Alcatel Lucent
APC	Access Promotion Contribution
ARPU	Average Revenue Per User
CASE	Center for Advance Studies and Engineering
ccTLD	Country Code Top Level Domain
CEOs	Chief Executive Officers
CIIT	Comsats Institute of Information Technology
CMN	Cellular Mobile Network
CBC	Community Broadband Centers
CPD	Consumer Protection Directorate
CMS	Complaint Management System
DNCR	Do Not Call Register
DPLC	Domestic Private Leased Circuit
EBC	Educational Broadband Centers
FAB	Frequency Allocation Board
FBR	Federal Board of Revenue
FLL	Fixed Local Loop
FY	Fiscal Year
GB	Gilgit Baltistan
GPON	Gigabit Passive Optical Network
HEC	Higher Education Commission
HF	High Frequency
ICT	Information Communication Technology
IHC	Islamabad High Court
IMEI	International Mobile Equipment Identity
IP	Internet Protocol
ISPs	Internet Service Providers
IST	Institute of Space Technology
KPI's	Key Performance Indicators
LDI	Long Distance International
LEAs	Law Enforcement Agencies
MF	Medium Frequency

MOS	Mean Opinion Score
MoU	Memorandum of Understanding
MRITT	Monitoring & Reconciliation of International Telephone Traffic
NAs	Northern Areas
NFC	Near Field Communication
NFC	Near Field Communication
NTP	Network Time Protocol
NUST	National University of Science and Technology
MTR	Mobile Termination Rate
MVNO	Mobile Virtual Network Operator
OEMs	Original Equipment Manufacturers
PKNIC	Pakistan Network Information Centre
PNCA	Pakistan National Council of Arts
PTA	Pakistan Telecommunication Authority
PTCL	Pakistan Telecommunication Company Limited
QoS	Quality of Service
RIO	Reference Interconnect Offer
SAMEENA	South Asia, Middle Eastern and North African
SBP	State Bank of Pakistan
SCO	Special Communication Organization
SKA	Sender Keeps All
SMP	Significant Market Power
SMS	Short Messaging Services
TSF	Telecoms Sans Frontiers
TWA	Trans World Associates
UAN	Universal Access Number
UAS	Universal Access and Service
UET	University of Engineering and Technology
UK	United Kingdom
USA	United State of America
USF	Universal Services Fund
VHF	Very High Frequency
VoIP	Voice over Internet Protocol
WLL	Wireless Local Loop
ZTE	Zhongxing Telecom



Functions & Powers of the Authority

The Authority, comprising of the Chairman, Member (Technical) and Member (Finance), deals with a wide range of functions by employing its powers vested upon it under the Pakistan Telecommunication (Re-Organization) Act, 2006 (Amended). It regulates the establishment, operation and maintenance of telecommunication systems and provision of services in Pakistan. The Authority receives and expeditiously disposes off applications for the use of radio-frequency spectrum, apart from protecting the interests of users of telecom services. PTA promotes high quality, efficient, cost effective and competitive telecommunication services ensuring rapid modernization of systems and services in the country. The Authority also investigates and adjudicates on complaints and claims made against licensees arising out of alleged contraventions of the Act, Rules, Regulations and license terms and conditions. PTA also submits recommendations to the Government on policies ranging from international telecommunications, support for participation in international meetings, agreements to be signed on channeling of international traffic, and accounting settlements. PTA also controls arrangements among service providers for sharing the revenues and enforces effective compliance by licensees on account of Universal Services Obligations. The Authority is also mandated to deal with competition, Access Promotion Contribution, consumer rights and disputes between licensees.

In order to achieve its objectives, the Act empowers the Authority to grant new licenses for telecom system and service on payment of fees. PTA monitors, modifies, enforces and regulates transfer of licensees. It also establishes and modifies accounting procedure for licensees and regulates tariffs for telecom services in accordance with the provisions of the Act. The Authority has the power to receive applications for the use of radio frequency spectrum and, where applicable, refer such applications to the Board (FAB) for assignment of spectrum within thirty days. Its functions also include prescribing standards of equipment and terminal equipment, certification of compliance of equipment with prescribed standards and approving equipment and installer as prescribed by the law. Providing guidelines and determining the terms of interconnection arrangements between licensees is another task of the Authority in addition to carrying out inspection of telecom equipments and premises occupied by licensees and summoning any person for an inquiry. It is in the Authority's purview to develop authorization to develop national telecommunication numbering plans, issuance of regulations for exercising its powers and performing its functions, and collection of information on telecommunications within and outside Pakistan in order to review its impact. The jurisdiction of PTA also consists of entering into contracts, regulating the allocation of revenues from international telephony service and levying fees and other charges at rates and services as may be fixed from time to time not exceeding the limit specified by a Committee of the Cabinet. PTA is also mandated to auction the radio frequency spectrum, as assigned by FAB, through a transparent and competitive process.

The Authority



*Dr. Muhammaed Yaseen
Chairman*



*Shabbir Ahmed
Member (Finance)*



*Dr. Khawar Siddique Khokhar
Member (Technical)*

Chairman's Message



I am pleased to present the Annual Report 2011 of Pakistan Telecom Authority. This year also, the PTA continued to play a defining role in enhancing telecommunication's contribution to Pakistan's economic growth, particularly in further developing this critical sector.

We kept up our track record of fulfilling the expectations of the telecom consumers, in addition to placing our due share in economic development of the country. This Report describes in detail the analysis of our performance and highlights the achievements during the year.

Despite economic downturn, the telecom sector of Pakistan displayed ample resilience and registered positive growth in all of its Key Performance Indicators (KPIs). We successfully crossed another milestone this year by achieving the impressive target of 100 million cellular subscribers. Broadband growth leaped beyond the estimated rate by crossing 100 percent average growth. The sector demonstrated financial stability and ARPUs began to show slight improvement. Provision of Quality of service remained priority of the Authority and it conducted QoS Surveys of its licensees to monitor the service quality. The Authority, along with the people of Pakistan, is set to enter into 3G arena, which is expected to bring more economic dividends and technical excellence in the country. With the commencement of 3G policy, the country will find itself speeding ahead on the information superhighway with astounding velocity.

Like the previous years, our endeavours were recognized at the international level. The Global Information Technology Report 2010-11 published by the prestigious World Economic Forum ranked Pakistan as No. 1 in the Internet and Telephony Competition. Pakistan Telecom Authority was declared as the Most Progressive Telecom Regulator in South Asian region by South Asian, Middle Eastern and North African (SAMENA) Telecommunication Council last year.

These achievements have given us immense confidence to pursue our vision with more vigour and passion. Our accomplishments will give us more reasons to celebrate our performance in the future.

I am sure this Report will give a fair idea of our efforts, particularly those of the operators who went beyond their capacities to give industry a fair push to put it back on the trajectory of growth. I owe appreciation and gratitude to my team including fellow members, telecom service providers and the industry for their sustained and strong commitment to promote the telecom sector and protect the rights of our valued consumers. I also wish to take the opportunity to thank the team of the Economic Affairs wing of PTA for preparing the Report.

*Dr. Muhammaed Yaseen
Chairman*





Executive Summary



Executive Summary

Despite several challenges during the year 2011, Pakistan Telecom Authority (PTA) took a range of measures to upgrade the quality of its services and step up its contribution to the national development. These actions stemmed from PTA's holistic approach actively pursued by the Authority since its inception in 1996. These actions, taken in concert with the telecom industry and under the patronage of the Government, helped the organisations in achieving impressive landmarks.

In line with its vision, the interests of the consumers and business feasibility remained the top priority of the Authority as it believes that these must be the major considerations of any regulatory decision. The actions based on this approach resulted into significant improvement in the statistics. Teledensity of the country touched 68.39% reflecting hike of 6.7% over the previous year. The number of mobile subscribers at the close of FY2011 stood at 108.9 million, showing growth rate of 10%, double than that of the last year. Mobile penetration rose to 65.4% from 60.4% in the previous year. There has been an increase in the number of Cell sites from 30,126 in June 2010 to 31,303 at the conclusion of FY 2011. A modest increase in cellular industry's ARPU was witnessed from US\$ 2.41 in the previous fiscal year to US\$ 2.45. Mobilink continued to lead the mobile subscribers market with 30.7% share chased by Telenor (24.5%), Ufone (18.9%), Warid (16%) and Zong (10%).

Notwithstanding the fact that wireless technologies took over a major share of broadband market, the number of broadband users in the country jumped the one million mark by multiplying to 1,491,491 at the end of FY2011 from 900,648, recording 66% increase. Broadband spread went up from 0.55% to 0.89%. The broadband clientele of PTCL was the highest i.e. 848,379 holding 57% market share trailed by Wateen with 218,506 customers and 15% market share.

Local loop (LL) segment of the industry progressed modestly in the face of competition from the wireless solutions including mobile cellular services. LL teledensity was at 3.4% with subscription of 5.72 million in June 2011. PTCL continued to be the dominant operator in the FLL market with 74% market share. The Long Distance and International (LDI) carried 11.4 billion international minutes as compared to 9.5 billion minutes in the previous year, demonstrating gain of 20%.

Telecom sector contributed over Rs. 116.9 billion to the national exchequer. GST/FED collections from the sector spiked by 20% to Rs. 52.6 billion. Total telecom revenues swelled to an all-time high Rs. 362 billion during the year. Cellular income which constitutes major chunk of the telecom revenues was boosted by 11% to Rs. 262 billion from Rs. 236 billion. During the past three years, PTA has collected around Rs. 40 billion against APC for USF. In its drive to curb grey traffic, the Authority saved revenue of US\$ 26 million.

The investment scene was encouraging with investment of US\$ 493 million in the telecom and FDI of US\$ 79 million. The imports in this field witnessed climb of US\$ 766 million from US\$ 725 million. The imports of Mobile handset shot up by 29% touching the mark of US\$ 218 million. PTA arranged several seminars in collaboration with the telecom industry to induce expert deliberations to attract major foreign investors.

In the context of a balanced regulatory policy, the Authority flagged during the year industry issues

including high GST, levy of provincial taxes and introducing 3G licensing (high quality cellular service) at the highest forums of the Government. PTA issued Show Cause Notices, imposed penalties, suspended or cancelled licenses of violators, and sensitized the telecom operators on the SOPs. In order to enhance the quality of services, PTA brought out Cellular Mobile Network QoS Regulations, 2011 and GPRS/EDGE Quality of Service Regulations, 2010. Due to its tremendous importance, PTA conducted number of 3G seminars to induce expert deliberations and create awareness among masses.

Other initiatives taken by the Authority for safeguarding the consumer interest included new online complaint management system for quick resolution of consumer complaints, SOP to control menace of spamming, unsolicited telemarketing and technical measures to pre-empt obnoxious and fraudulent communication, installation of Anti-Spam filters on mobile networks, allocation of common Short Code, SMS blocking facility, verification of Pre-NPR Data of the customer, and the facility to stop unwanted balance transfers. PTA also set up national Rabta Information Portal for provision of information and content at one place. The Authority received 31,338 consumer complaints of which 97 percent were resolved during the year.

PTA assisted the law enforcement agencies by putting up a comprehensive subscriber authentication and verification system to deal with the issue of illegal or unverified SIMs. An array of measures were taken including the launch of Subscriber Verification System, monitoring system for sale of new SIMs, and system to cleanse existing database of mobile subscribers. These internationally recognized projects were monitored through regular field surveys and visits to Customer Service Centres. The Chairman of PTA was nominated to head a Joint Committee to tackle the issue of low-cost handsets without an IMEI number or with fake or duplicate IMEI. In collaboration with the law enforcement agencies, PTA carried out 45 raids since 2009 against grey traffickers. During the year PTA blocked 1095 websites owing to consumer complaints and other inputs.

During periodic Quality of Service (QoS) surveys initiated by PTA, the Authority took actions against the telecom operator in case of any shortfall in the required parameters, directing the concerned CMTOs to improve their services. As a result of QoS survey of PTCL, a deviation from the parameters laid down in the company's license terms and conditions was revealed. Subsequently, PTA issued Show Cause Notice to PTCL on account of poor QoS and directed PTCL to improve its quality of service within six months, however, PTCL has challenged PTA's determination in the court of law. For Wireless Local-Loop (WLL) sector, PTA conducted second comprehensive QoS survey of Limited Mobility verification of all operational WLL licensees and their QoS found satisfactory.

Authority continued to encourage research in the telecom sector through linkages with educational institutions. Under the PTA Academia Linkage program, PTA signed Memorandums of Understanding with leading universities of Pakistan to initiate research integrated activities and groom future leadership in policy and regulatory issues. PTA also awarded Gold Medals and Cash prizes to university students for outstanding research in projects related to telecom and IT. The "Ericsson - PTA Mobile Excellence Award" was announced to facilitate ICT proliferation in Pakistan.



The performance of the Authority was applauded at regional and international level. PTA was declared the Most Progressive Telecom Regulator in South Asia for the year, while Chairman PTA, Dr. Mohammed Yaseen received the honour of Best Telecom Regulatory Leader of the Year from the South Asian, Middle Eastern and North African (SAMENA) Telecommunication Council. The achievement of 100 million mobile subscribers was celebrated at the highest level in a mega event attended by Prime Minister Yusuf Raza Gilani.

The Authority did not rest on its laurels and with a futuristic approach started preparations for adapting the sector according to the new dynamics in the field. PTA chalked out 'Vision 2020' document that is a peep into future developments in the fast growing sector and likely impediments on the way over the next 10 years. The report envisions a radical transformation of the telecom sector from a support industry to an engine of economic growth. The document may help policy planners for crafting best possible policies in a technology and service converged environment in which the number of mobile users, broadband subscribers and fixed line customers will cross the marks of 160 million, 19 million and 5 million, respectively in the country in 2020.

Chapter -1

Focus Areas





At the close of new millennium's first decade, the telecommunication services have entered a new era in which technology and services performing a pivotal role have transformed all aspects of human life. Today, Pakistan's telecommunication sector is confronted with compelling demands for latest technology and services available globally and at the same time dealing with influx of array of value added services. Cognisant of the international telecom scenario and the resulting domestic demands, Pakistan Telecom Authority (PTA) devises a strategy which is reflective of a fair regulatory regime which ensures equitable and affordable telecom services for all. During the year 2011, PTA tuned its focus on priority areas according to the changing environment with a view to achieving professional excellence which is the need of the times. In line with its vision, the Authority took a range of regulatory steps which created a telecom environment of fair competition, improved service quality and satisfied customers.

Working hand in hand with the telecom industry and under the patronage of Government of Pakistan, telecom sector performed beyond expectations. A roundup of regulatory actions taken by PTA in 2011 is covered in the following pages.

Towards Competitive Markets

Prime objectives of the Authority include keeping the sector at par with technology improvements worldwide and maintaining and enhancing competition in the sector. It also ensures that external and internal joggles do not affect the dynamics of the sector. The Authority over the years has made efforts to bring about a shift from monopolistic market structures to competitive ones in each segment of the sector. The Authority has succeeded in achieving this aim. However, the Authority has a radically different scenario in front with foreign operators vying with home-grown telecom giants, triggering a different set of issues and concerns of the players. The challenge of sustaining the competition in the industry, therefore, has become more daunting for the regulator in an economically volatile environment. PTA took on this challenge head on successfully during the year by taking a number of initiatives, mentioned in the Report, to warrant a healthy and beneficial competition in the market.

Review of Mobilink's (PMCL) RIO

Mobilink proposed amendments in its Reference Interconnect Offer (RIO) for approval of the Authority owing to problems faced by the operator regarding LDI payments. Mobilink submitted revised RIO related to suspension, credit management and security deposit with a view to introducing clarity and warding off any potential financial exposure. The Authority approved the proposed changes in the RIO, after these amendments were incorporated following a feedback from the industry. The revised RIO was placed on PTA's website and all operators were asked to sign the interconnect agreement.

3G Mobile Services in Pakistan

The project of 3G licensing is one of the most important telecom prospects in Pakistan. It is a baseline which can enable cellular mobile operators to provide the customers with diverse and rich voice and data services. The introduction of 3G licensing will give tremendous impetus to social and economic growth and increase the revenues. With the launch of 3G, Pakistani cell phone subscribers will be able to transmit and receive high speed data through their mobile phones.

3G licensing in Pakistan is long overdue. Previously, some technical reasons including the issue of vacations of spectrum caused the delay which has now been resolved. In June 2011, the Authority asked mobile cellular operators to submit their Expression of Interests (EoI) regarding auctioning of 3G Spectrum/Licensing which have been deposited by them. PTA also launched a campaign for creating awareness about the 3G technology, so that these services could be accepted by more and more prospective users which will expedite its proliferation. In this regard, PTA organised several seminars in collaboration with the telecom industry in order to induce expert deliberations among the renowned telecom professionals about the immense potential of 3G services to lure investment.

Footprint of Telecom Coverage in Pakistan

In view of the tremendous growth in telecom coverage, PTA developed an application enabling the would-be clientele, telecom operators and investors to view footprint of the telecom service coverage in Pakistan. This interactive application allows users to dynamically plot the coverage of telecom services in graphical format. It has been categorized into four major services including, broadband, cellular, FFL (Fixed Line Loop) and WLL (Wireless Local Loop) which are further bifurcated into technologies and number of PTA licensees.

Approval of PTCL Packages

As per its mandate, PTA continued to regulate the new packages/call rates of SMP operators in order to ensure that unfair practices are not exercised and effective competition is maintained in the market. The Authority approved tariff proposals suggested by PTCL during FY 2011 after these proposals were analyzed by the Commercial Affairs Division of PTA. The proposals are as follows:

- ✘ *Revision of Pakistan Package*
- ✘ *Revision of Vfone SMS and internet tariffs*
- ✘ *Revision of Vfone Family package*
- ✘ *Approval of Vfone Smart package*
- ✘ *PTCL New Years Bonanza promotion*
- ✘ *PTCL Cricket World Cup Promotion*

- ✘ *Vfone Family Package*
- ✘ *Revised Pakistan Package*
- ✘ *Revision of Line Rent of Vfone Family Package*
- ✘ *Increase in Line Rent of PTCL Land Line Phones and Free On-Net Calls on Sundays*

However, some of the proposed tariff plans including the following were not approved by the Authority in the interest of consumer welfare.

- ✘ *Increase in Directory Assistance (1217) charges*
- ✘ *5% service charge on Vfone card reloads*

PTCL's Promotional Upgrade of 1MB DSL Connections to 2MB

In order to upgrade the internet speed, PTCL upgraded 1MB DSL connections (except those on student package) to 2MB package in May 2011. During the promotion drive run through media, upgraded subscribers were given 2MB speed at 1MB charges (Rs.1,199 per month) for two months. After expiry of the promotion period (30 June 2011), the charges of 2MB package were increased by only Rs.300/- i.e. Rs. 1,499 per month. The subscribers had the option of not availing the upgraded package by reverting to the 1MB package through PTCL helpline. Following submission of the package to PTA for endorsement, the Authority issued a directive to PTCL to switch over the opt-out choice to opt-in package. PTCL was asked to amend its promotion advertisement according to the steps proposed by PTCL.

Regulatory Environment

Regulating telecom sector by employing legal tools is being debated around the world, especially among the regulators. There exists a fine line between two options - to regulate or not to regulate. A healthy regulation supports growth in the sector, and striking a balance between the two extremes is prerogative of a regulator. PTA has always tried to maintain this equilibrium while regulating the sector by pursuing a flexible approach. The corrective measures taken by the Authority, therefore, helped create a healthy environment with a margin for improvement. PTA issued a number of regulations, including Quality of Service (QoS) during the reported period to safeguard consumer rights and ensure better standard of service. Authority also improved various Regulations in view of the changing environment in the sector.

Enforcement of PTA Orders

At the end of October 2011, the Authority issued 509 Show Cause Notices to different licensees on issues including non-payment of APC for USF contribution, non-payment of outstanding dues, usage of extra radio frequency, and misuse of numbers. The Authority served these Notices in the light of section 23 of the Telecommunication (Re-Organization) Act 1996 which mandates the Authority to issue to the Licensee a Show Cause Notice "where a licensee contravenes any provisions of the Act or the Rules made there under or any terms and conditions of the license". Against the Show Cause Notices issued to different

Category	Show Cause Notices	Enforcement orders issued/disposal of SCNs	Court Cases
CVAS	440	235	02
APC for USF	34	all pending	18
LL, LDI, Mobile & others*	35	19	109
Total	509	254	129
*Regulatory matters including outstanding dues, rollout obligations, etc.			

licensees, the Authority issued 254 Enforcement Orders. During the period under report, a few licensees approached the Court of Law and got stay orders.

Quality of Service

The overwhelming growth and availability of telecom services across Pakistan has the potential to compromise its Quality of Service (QoS). PTA believes that a service is deficient if it does not meet the desired QoS standards. In order to achieve, maintain and enhance the service quality, PTA laid down specific, technical QoS standards in the approved terms and conditions of all telecom licenses. A number of QoS related initiatives were undertaken by the Authority to ensure telecom operators adhered to the QoS standards set by the Authority through its Act, Rules and Regulations, SOPs and license terms and conditions. PTA conducted periodical QoS surveys through out the country for critical analyses so that Show Cause notices, warnings, penalties and other legal actions could be taken against the telecom operator whose services fell short of the quality benchmarks. This measure became instrumental in providing quality communications to consumers by the operators.

Cellular Mobile Network QoS Regulations, 2011

The survey conducted in 2009, shows that the mobile operators have not been able to meet the required QoS standards. As a consequence of 2009 QoS survey across Pakistan, all mobile operators have been show caused on substandard service on 17th December, 2009. After the 2009 survey the industry raised various concerns about the survey methodology and the QoS tools used by PTA. As a consequence, marathon discussions were held with the top technical heads of the mobile industry and eventually a consensus was developed on the survey methodology that was highly favorable to operators. PTA realizing its regulatory obligations and to further legalize the entire activity has prepared "Cellular Mobile Network Quality of Service Regulations 2011". These Regulations have been notified through Gazette, applied to all cellular mobile operators to identify the minimum quality of service standards and associated measurement, and reporting and record keeping tasks, except packet switched or GPRS/EDGE services.

GPRS/EDGE Service Quality of Service Regulations, 2010

In line with the international standards and in consultation with the industry, PTA prepared GPRS/EDGE KPIs to maintain Mobile cellular Quality of Service to the satisfaction of the consumers. These KPIs were incorporated in the regulations which are applicable to all cellular mobile communication service Licensees for establishing quality of service parameters for GPRS/EDGE services and to see whether the criteria determined by the Authority from time to time is being followed.

Survey on QoS of Cellular Mobile Operators

The foremost objective and responsibility of PTA is to ensure consumer satisfaction in terms of the Quality of Service (QoS) offered by the operators. Therefore, the Authority has been diligently monitoring the performance of the cellular mobile operators from the standpoint of service quality since 2002 through surveys and Drive Tests across the country. The survey/Drive Tests are conducted by NEMO QoS computerized monitoring equipment which provides automated results

after measuring the performance. The results are published in print media for the information of consumers.

The license of CMOs puts immense emphasis on the required QoS criteria, describing, at the outset, the QoS level to be abided by the operators. These QoS parameters include Network Down time, Grade of service (Blocking), Call completion ratio, Call connection time and Call Quality for Voice and SMS Success Rate and End to End SMS Delivery for SMS. These parameters are individually assessed for each call and their results are compared with the license and Cellular Mobile Network (CMN) QoS Regulations to determine the service quality.

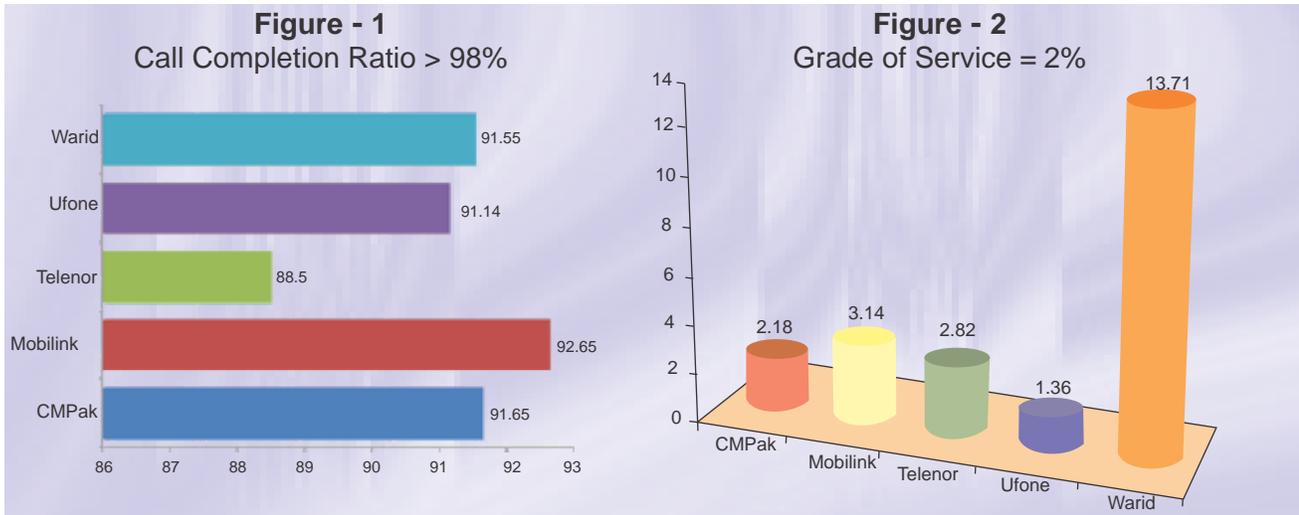
However, PTA being the most transparent and fair regulator in the region believes in improving the service quality through strict monitoring as well as understanding and addressing the issues faced by the cellular mobile sector that forms the basis of poor or unsatisfactory service quality. After the 2009 survey the industry raised various concerns about the survey methodology and the QoS tools used by PTA. As a consequence, marathon discussions were held with the top technical heads of the mobile industry and eventually a consensus was developed on the survey methodology that was highly favorable to operators. Similarly, the mobile operators also agreed to provide their QoS tools to PTA for monitoring but unfortunately the compliance has been dismal.

Monitoring of the service quality is a continuous process. Realizing its obligations to the consumers, PTA initiated the 2011 QoS survey in Pakistan. The survey results for Rawalpindi/Islamabad were compiled for analysis. Table - 2 shows the findings related to the cellular mobile operators in each category of service yardstick. According to 'Cellular Mobile Network Quality of Service (QoS) Regulations, 2011', Network Down-Time (non-availability of mobile service) should be less than 1%. Under this parameter, Telenor, Ufone and CMPak achieved the required level while Mobilink and Warid had a downtime of more than 1%. Similarly, Call Completion Ratio is required to be more than 98% which pertains to the retainability of the call, until disconnected by either caller or sender. Though none of the cellular companies could meet the asking standard of above 98%, Mobilink had the highest ratio (92.65%) while Telenor scored least (88.5%) among all the operators in this parameter. The time to connect a calling party to the receiving party is tested under the Call Connection Time. None of the cellular operators could meet the below 5 second threshold value. However, Mobilink depicted the

Table - 2
Cellular Mobile QoS Survey Results (2011)
(Voice)

Operator	Network Down Time < 1 %	Grade of Service < 2 %	Call Completion Ratio > 98 %	Call Connection Time < 5 Sec	Call Quality (MOS) >3
CMPak (Zong)	0.10	2.18	91.65	6.70	2.97
Mobilink	2.36	3.24	92.65	6.20	2.75
Telenor	0.00	2.82	88.50	7.18	2.63
Ufone	0.20	1.36	91.14	7.42	2.67
Warid	1.15	13.71	91.55	6.38	2.82

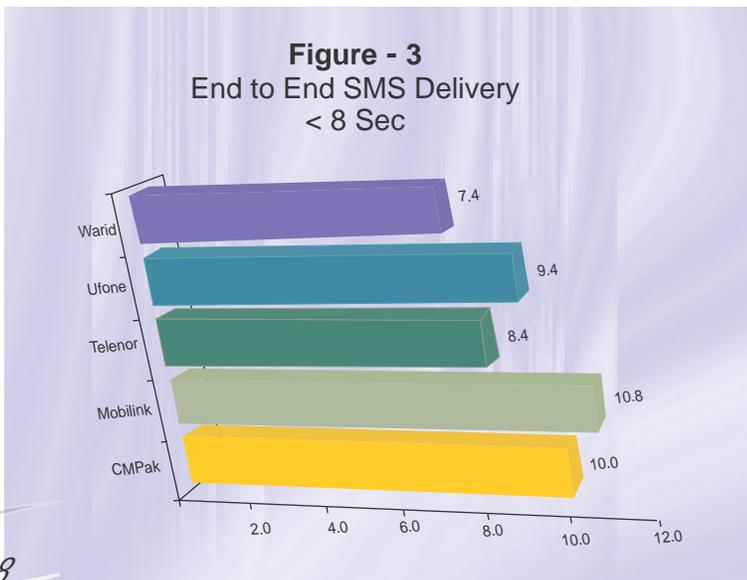
quickest call connection time while Ufone was found to be the slowest to connect the desired call. The most important parameter of service quality is Mean Opinion Score (MOS) that basically shows the call/speech quality of the call. CMPak had the best score in this criterion. Figure 1 & 2 depicts Call Completion Ratio and Grade of Service of the operators. All the operators performed short of the required standard of above 98% for Call Completion. As regards grade of service, only Ufone was able to fulfil the needed level of less than 2%.



In SMS category, the success rate for delivery of an SMS should be at least 99%. CMPak, Mobilink and Telenor were calculated to be just below the required threshold value while Warid recorded the lowest probability of a successful SMS delivery. In the end-to-end delivery time for an SMS message,

Table - 3
Cellular Mobile QoS Survey Results (2011)
(SMS)

Operator	SMS Success Rate $\geq 99\%$	End to End SMS Delivery ≤ 8 Sec
CMPak	98.7	10.0
Mobilink	98.7	10.8
Telenor	98.3	8.4
Ufone	94.8	9.4
Warid	82.5	7.8



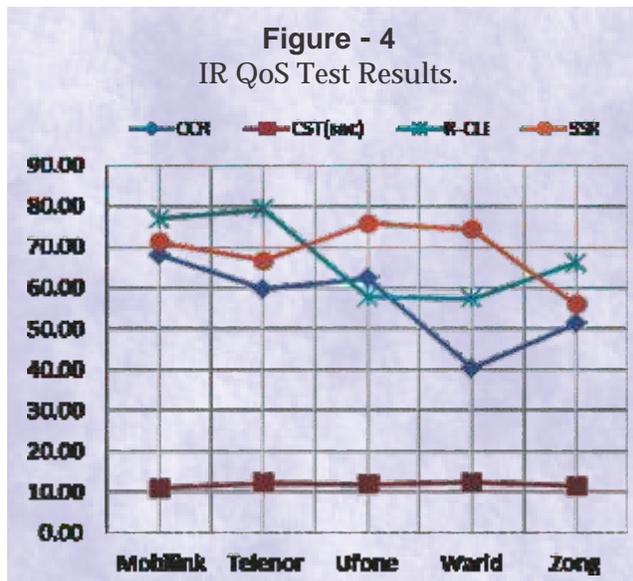
it is required to be delivered to the recipient within 8 seconds. In this estimation, cellular companies failed to achieve the desired results. Among all the operators, Warid performed the best while Mobilink took the longest time to transmit the SMS. Figure-3 presents end to end SMS delivery time of each operator.

Focus Areas

Quality of Service (QoS) of International Roaming (IR)

PTA actively monitors QoS of operators to safeguard consumers' interests through regular QoS surveys of services offered by its licensees. First International Roaming (IR) service testing / benchmarking was conducted in 2006 followed by the second phase in 2009. Following standards were developed to measure IR QoS (Table - 4), based on best international practices.

The 2009 survey test result is shown in Figure - 4 below :



The results of the survey encouraged the regulator to develop SLA KPIs (mentioned in Table-5) for inclusion in agreements LDIs & CMTOs, after through consultation.

The essential parameters for IR billing format were also finalized, and a survey was carried out in Mid 2011 to check the billing discrepancies (results of survey mentioned in Table-6).

Despite difficulties faced by operators due to power cuts (blackout/brownout), rising cost of fossil energy, the cellular operators have been trying to maintain services at affordable cost. The regulator is of the opinion that with a little more effort on part of operators in meeting the criteria shown at Table-4 & Table-6, IR customer will greatly benefit.

Table - 4
IR QoS Parameters

Sr.#	Parameter	Reference Value
1	Call Completion ratio (CCR)	80%
2.	Call Setup Time (CST)	16.5 seconds
3.	Mean Opinion score (MoS)	3
4.	End to End call delay (E2E)	Preferred 150 msec Up Limit 400 msec
5.	Received Caller Line Identification (R-CLI)	99%
6.	SMS Success rate (SSR)	95%
7.	SMS End 2 End duration (SMS E2E)	Upper limit 90 sec

Table - 5
KPIs List for Inclusion in SLAs

Sr.#	Parameter	Reference Value
1.	Call Setup Time (CST)	15 seconds
2.	Mean Opinion score (MoS)	4
3.	End to End delay (E2E)	300 millisecond
4.	Received Caller Line Identification (R-CLI)	99%
5.	Network Efficiency Ratio (NER)	99%
6.	Average Call duration (ACD)	Monthly basis
7.	SMS Success rate (SSR)	99.9%

Table - 6
IR Billing Parameters Details

Parameter	Mobilink	Telenor	Ufone	Warid	Zong
Date	✓	✓	✓	✓	✓
Time (sec)	✓	✓	✓	✓	✓
Number (destination)	✓	✓	✓	X	✓
Call duration (hh:mm:sec)	✓	✓	X	✓	✓
Location (Operator, Country)	✓	✓	X	X	X
IR Traffic i/c, o/g	✓	✓	✓	✓	✓
Summary Page (Account history, service details)	✓	✓	✓	✓	✓

✓ : means the requirement met by the operator

Quality of Service of PTCL

PTA monitored the service quality offered by PTCL as per the license, as was done for cellular mobile operators. The Authority formulated a comprehensive QoS survey methodology and conducted the survey jointly with PTCL from 1st August to 30 September, 2009 in all the fourteen telecom regions in the country.

PTCL is the dominant fixed line operator and enjoys virtual monopoly in the local loop market and even the introduction of new operators through deregulation of telecom sector could not impact on its market position. Even after the company's management control was transferred to Etisalat (Telecommunications Company of the United Arab Emirates), QoS of the company could not get better and displayed dismal performance in the fixed local loop.

Table - 7
Results of Quality of Service (PTCL)

Fault Incidence	Fault Clearance		Call Failure Rate		Billing Error	Inquiry Response
37/100 lines/annum	95% within 24 hrs	100% within 48 hrs	2.70% (Local calls)	4.10% (NWD calls)	0.05 / 100 bills/month	98% in 10 sec.
121.29	74.87	92.86	2.19	2.83	0.79	17.34

Survey results illustrated that PTCL's service quality was not up to the QoS parameters as stipulated in the license. PTA eventually issued Show Cause Notice to PTCL on account of poor QoS. After hearing and analysing the response of PTCL, the Authority issued the determination against PTCL on 31 March, 2011, granting, on compassionate basis, six months time i.e. till 30 September, 2011 to improve the quality. Unfortunately PTCL, instead of addressing the issue, resorted to take the matter to Islamabad High Court against PTA's determination and the Honourable Court granted stay.

Second Nation-wide WLL Quality of Service Survey

The Authority conducted an elaborate Quality of Service survey in Pakistan and AJK of all working Wireless Local-Loop (WLL) Operators from 15 November, 2010 to 15 December, 2010 on a jointly agreed methodology. The assessment was undertaken by the relevant zones in Karachi, Lahore, Rawalpindi & Islamabad, Quetta, Peshawar and Muzaffarabad.

The primary aim of the survey was to gauge the performance of the operators from the consumer perspective. Key Performance Indicators (KPIs) of the survey covered all the important aspects of QoS that are important to the consumers including Network Availability that provides the status of the availability of network (and the possibility of accessing WLL) in the claimed coverage of the operator. Other indicators constitute Call Setup Time which gives information on the time duration to establish a call. Service Retainability is another important aspect from the consumer viewpoint that measures whether the call is sustained for defined period and is not interrupted or dropped unintentionally. Lastly, Mean Opinion Score (MOS) gives the quality of speech between the calls. The findings of the consolidated survey are as follows:-

Table - 8
Results of Second Nationwide Quality of Service Survey (WLL)

Operators	Network Availability (100%)	Service Accessibility				Call-Setup Time Delay (<= 8 Sec)	Service Retainability (>= 95%)	MOS Grade (>= 3)
		Local Calls ON-Net (97%)	Nationwide Call (95%)	Int'l Call (95%)	Average (95.7%)			
Wateen Telecom	99.5	77.5	93.4	100	90.3	6.2	92.5	3.7
Telecard (Go- CDMA)	100	86	82.6	74	80.9	7.7	97.2	3.8
PTCL (V-fone)	100	96.8	95.5	98.3	96.9	8.7	97.6	4
Link Direct (Infinity)	100	100	N/A	100	100	7.4	99.7	4.9
World Call	100	98.8	100	100	99.6	7.7	96.4	4.1
SCO	100	98	100	100	98.6	7	100	4.8

The Table-8 shows that by and large the service quality of WLL operators is satisfactory as they were able to exhibit Key Performance Indicators (KPIs) in the context of QoS with the exception of few.

Number Allocation and Administration Regulations, 2011

The Number Allocation and Administration Regulations, 2005 were reviewed and repealed with the promulgation of the Number Allocation and Administration Regulations. The scope of review included revision of the UAN into categories with a revised charging regime and inclusion of detailed terms and conditions with respect to the usage of number resource allocated by the Authority. The regulations have been gazette notified.

Measures taken by PTA to Control Grey Traffic

The Authority took effective steps to control Grey Traffic which is “the use of illegal gateway exchanges to bypass the legal gateways and terminate/ originate international traffic, through VoIP gateways, GSM gateways, WLL phones, mobile SIMs or other related equipment so as to avoid applicable taxes and/or regulatory fee”.

Access Promotion Contribution

PTA sprung into action to check grey traffic as, apart from being a punishable offense, it causes financial loss to the country. During past three years PTA collected around Rs. 40 billion against APC for USF. According to Telecom Deregulation Policy 2003, net incoming international traffic generates a financial premium over the cost of conveying and terminating the traffic into Pakistan. This premium is called “Approved Settlement Rate” (ASR) which consists of two portions: one is called “Access Promotion Contribution” (APC) and the other constituent is termed as Long Distance and International (LDI) operator share.

The APC is paid to the last operator providing service to the end subscriber, if the call is terminated on a Fixed Line/WLL user. Whereas in termination of call on mobile subscriber scenario, the APC is paid to the Universal Service Fund (USF), a fund managed by USF under Ministry of Information Technology (MoIT) to promote infrastructure expansion in the underserved rural areas. Both Licensed and Unlicensed operators tend to be inclined towards grey traffic to bypass APC payments.

PTA's Mandate/Legal Position

According to Section 31 of the Pakistan Telecommunication Re-organization Act (1996), operation of Telecommunication System without obtaining a valid license from PTA is a punishable offense and empowers the Court of Law to impose a fine of up to Rs. 10 million or imprisonment of three years. Beside this, Section 32 of the Act authorizes PTA to obtain a search warrant from the Court of Law to take action against illegal operators.

Grey Traffic Counter Measures

As in the past, PTA in 2011 took both technical and regulatory measures to contain and wipe out the grey traffic. As regard regulatory measures, PTA in keeping with deregulation policy revised the ASR rate at which operators obtain traffic from foreign carriers. This is done by reducing the APC for USF for licensed operators, as illegal operators are not bound to pay any taxes and fees. Since grey traffic is geared towards avoiding regulated fees imposed on traffic buying and interconnects, reduction in associated rates lowers the profit margin for grey traffickers.

Technical measures consist of monitoring of international back bone links which is critical for having visibility of the traffic flowing in the country. As most of the grey traffic flows on the IP links, action can be taken beforehand to eliminate grey traffic by detecting it before it is terminated on the end user's phone. The Project of Monitoring & Reconciliation of International Telephone Traffic (MRITT) was deployed and made operational in May 2008 with a view to spotting grey traffic for reduction and elimination.

Monitoring System Achievements

The Technical System monitors Internet Protocols (IPs) and automatically blocks any unauthorized IP carrying voice traffic. Since March 2009, monitoring system blocked around 0.18 Million unauthorized IPs (about 275 IPs per day) carrying voice traffic. The system reported traffic is matched with the traffic reported by the operator to examine any concealment made by the operator. The system also generates reports of any setup with irregular traffic patterns which are shared with Federal Investigation Agency (FIA) for raid action.

Since installing the monitoring system, PTA has discovered around one hundred and seventy five illegal setups. Since 2009, forty five raids jointly with FIA have been conducted successfully across the country resulting in the arrest of 55 persons including 6 foreigners and confiscation of 442 Illegal Gateway equipments. Out of the 45 cases, 24 are under investigation at the FIA and 21 cases are in the Court of Law. More than fifty percent of the cases where raids were carried out are under investigation at FIA and remaining are in the Court of Law. To-date, none of the culprits has been convicted by the Court. Other actions by the Authority include blocking so far of 71,877 SIMs and 43,501 IMEIs involved in illegal termination of grey traffic.

The Authority believes that the Voice over Internet Protocol (VoIP) is a very diverse and advanced field leading to continuous evolution in VoIP protocols and technologies. The existing monitoring system which is capable of detecting limited number of VoIP protocols needs to be updated as it is covering less than 30% of total IP bandwidth in the country. As a result, grey operators are able to bring traffic in the country unchecked. The upgradation of the system requires significant amount in US Dollars. The Authority has taken up this issue at various forums.

Improvement Proposals/Recommendations

It is estimated that the system could be updated with half a billion Rupees. Therefore, Ministry of Information Technology has been asked to approve expansion of the IP monitoring system in addition to allocating adequate portion of the USF fund to the Authority on monthly basis for regular maintenance and enhancement of the system and other vigilance related activities.

It is also suggested that the offense of grey traffic being of technical nature should be prosecuted by a special tribunal having technical proficiency for expeditious disposal of such cases. Therefore, the need to establish a special tribunal could hardly be over-emphasised. Presently, all telecom offences are processed and decided by courts after investigation carried out by the Federal Investigation Agency. Though in 2006 amendments in section 7 to the extent of appellate tribunal was made in the Pakistan Telecommunication Act (1996), the tribunal has yet to be set up by the Government.

Subscriber Authentication

As security situation in the country worsened during 2004-2008, the use of mobile phones in terrorist activities and organized crime became a challenge for the law enforcement agencies. Lack of proper documentation and easy availability of illegal SIMs in the market made tracking of the culprits increasingly difficult as most trace routes pointed to the antecedents of the wrong person. The task became even tougher as cellular subscribers in the country multiplied exponentially from 3.3 million in 2004 to 88 million in 2008 owing to intense competition following the deregulation of the sector in 2004.

PTA stepped in to assist the Government and security agencies in meeting the challenge by devising a technical solution which could stop the sale of illegal SIMs and cleanse the existing mess of unverified/illegal SIMs in the country. As a first step, PTA dealt with the task of curbing the sale of illegal/unverified new SIMs. For this purpose, the Authority introduced “Subscriber Verification System 789” on 1st January 2009, making it mandatory for the companies to activate the sold SIM only if the customer calls at short code 789 and answers mandatory secret questions i.e. mother's name and place of birth. PTA played a central role in the implementing this system which involved extensive coordination with National Database and Registration Authority (NADRA) and cellular mobile operators. With this system, 12.617 million pre-active unverified SIMs available in the market were blocked.

In parallel with tackling the issue of new SIMs, PTA worked on a much bigger and complex task of verifying and rinsing out the massive database of 94 million cellular mobile connections/SIMs (both existing and old) which were issued since 1990. PTA took regulatory initiative of introducing “SIM Information System 668 & 667”, where a customer could find out the antecedents of its SIM by sending a message at short code 667 and/or enquire about the number of SIMs issued against his/her Computerised National Identity Card (CNIC) by sending CNIC number to short code 668. PTA also launched a mass awareness campaign in print and electronic media to familiarise the public with these services and guidelines to report the unauthorized/illegal SIMs to the concerned operators. As a result of this activity, 3.56 million unregistered SIMs have been reported so far out of which 2.40 million have been regularized or cleansed and 1.16 million unregistered/fake SIMs have been blocked. However, as considerable number of SIMs was not verified or authorized by the

customers, the Authority launched “Proper ID Verification” activity. Under this initiative, the cellular mobile operators are required to keep asking the remaining SIMs to approach 668 database, through SMSs/print and electronic media campaign. Out of targeted connections of 16.89 million, 14.62 million SIMs have been regularized while 2.27 million irregular SIMs or those with fake identity have been made inoperative.

PTA is conscious that enforcement of these regulatory steps will not deliver unless backed by rigorous monitoring and continuous upgrade. PTA, therefore, continues to monitor these systems by carrying out regular field and call centre surveys. Fines/penalties/closure of franchises and/or retailers constitute some of the hard line measures taken by PTA to keep the SIM authentication procedures from going astray. PTA's efforts have been recognized internationally as the system was listed among the finalists during recently held mBillionth South Asian Awards 2011 at New Delhi organized by Digital Empowerment Foundation (DEF). Countries including Egypt and Nigeria are in the process of replicating similar subscriber authentication models. PTA will be launching major improvements in the existing systems including online CVAS forms, one window operation 789, linking pre-sale and post-sale procedures online.

Non-Standard IMEI Mobile Handsets

The International Mobile Equipment Identity (IMEI) number is a unique number for every handset, used by the cellular networks to identify the user of a particular device. The number is helpful in tracing the user on the cellular network who misuses telecom facility for any wrong purpose or uses any stolen hand set. However, with the influx of low cost mobile handsets mostly made in China, the telecom regulators around the world have the next hard job to deal with the issue of these handsets with no/fake/duplicate IMEI number. Security and law enforcement agencies in Pakistan have shown serious concerns on the use of these handsets as many terrorist activities could not be investigated owing to the suspected use of hundreds of mobile sets with identical IMEI operating at the same time on mobile companies' networks. According to estimates done through data analysis of IMEIs on CMOs networks, around 30-35% of the mobile handsets in Pakistan's market have non-standard equipment identity number.

To address this alarming situation, Ministry of Interior has constituted a Joint Committee under the chairmanship of Chairman PTA, comprising members from Ministry of IT & Telecom, Ministry of Interior, ISI, FIA, Mobile Operators and PTA. The Committee unanimously recommended charting out a joint strategy after deliberations with all stakeholders. According to the recommendations, Ministry of IT & Telecom will issue policy directive on the IMEI and Ministry of Interior will initiate action against importers and those involved in sale/change of non-standard IMEI while Ministry of Finance/Ministry of Commerce will ensure stringent checks on import of non-standard IMEI mobile handsets.

Developing Academia Linkages

PTA works to model the telecom sector of Pakistan according to the latest technological and regulatory trends in the world. To fulfill this objective, it is of utmost importance that innovative regulatory approach is backed by strong academia linkages. PTA intends to provide practical issues for research

to the universities in Pakistan as the level of research oriented activities has arisen in the country. In Authority's view related organizations would benefit from this collaboration as research done by young experts in the relevant fields of telecom under guidance from the faculty and PTA, could be translated into entrepreneurship. PTA signed Memorandums of Understanding with leading universities of Pakistan to initiate research integrated activities to equip the future leadership with knowledge and training in policy and regulatory issues. PTA also awarded five gold medals and cash prizes to final year students of universities recognized by Higher Education Commission (HEC) for outstanding research projects in the field. PTA also organized an essay competition on World Telecom Day, and gave away PTA-Ericsson Mobile Excellence Awards and SMS-based Information System to the education institutions.

MoUs with Universities

PTA embarked upon signing MoUs with leading universities of Pakistan in 2010 including National University of Science and Technology (NUST) and COMSATS Institute of Information Technology (CIIT). The Authority also signed an MoU with the University of Engineering and Technology (UET) Taxila, Center for Advance Studies and Engineering (CASE) and Institute of Space Technology (IST) in 2011 to promote telecom related research in the academic circles.

In order to ensure coordination and follow up to these MoUs, a high level coordination committee under the chairmanship of Member (Technical), was constituted. According to the Memorandums of Under-standing, PTA will provide data on telecom sector and ex-pertise to the universities while the universities will encourage the students to undertake research. PTA has proposed telecom related research topics to the universities and is in close liaison with them in connection with the progress.



PTA Gold Medals Awards

The bond between PTA and Academia was further augmented as the Authority began to present gold medals with cash prizes to the students of best research projects in IT & Telecom since 2008. The most prestigious academic institutions in the country have received these awards from PTA as competition gets tougher every year. During the year under report, the Authority kept up the tradition of the awards to the winners of the competition during a ceremony held at PTA Headquarters in Islamabad.



PTA-Ericsson Mobile Excellence Awards 2010

As a follow up to the Joint Statement of Interest signed between PTA and Ericsson to promote ICT proliferation in Pakistan, PTA and Ericsson announced “Ericsson - PTA Mobile Excellence Award” in a ceremony held in Islamabad on December 2, 2010. The event was attended by Mrs. Ewa Björling, Minister of Trade of Sweden, Dr. Mohammed Yaseen, Chairman PTA, Mr. Mohsen Tavakol, President of Ericsson Pakistan, and senior management of Ericsson and PTA. The award and cash prize of Rs. 100,000/- was conferred on Mr. Muhammad Bilal Junaid and Mr. Talha Shabib Ahmed, for developing an SMS SPAM Interceptor application which is an Android based application for the Open EMR (Electronic Medical Records) system. This application is intended to empower doctors in rural areas to maintain patient record through their mobile telephones. The winner of the Mobile Excellence Award will also get an opportunity to do qualified practice through internship at Ericsson for a period of six months from the time of graduation.

Exploring New Paradigms

With a view to keeping itself abreast of technological headways and seek solutions for evolving domestic demands, PTA sets targets for its various Divisions at the beginning of each year to conduct studies on a number of emerging issues. Based on the findings of the studies, the Authority makes recommendations to make the telecom sector more consumer-friendly. Following studies were conducted during the year:

Study on 4G Status and Recommendations for Pakistan

A study on 4G status was initiated in May 2010 with the aim of exploring technological developments, service demand, and international efforts for mobile broadband. The report described the status internationally of third and fourth generation technologies, by figuring out the evolutionary path from 3G to 4G technologies. The study presented comparisons of various standards including IMT-2000, 3GPP, and IEEE 802.16 along with the best international practices in industry consultation for introducing 4G technologies.

Analysis of CMOs Revenue from Voice and Data

An analysis of revenue from Voice and Data services offered by Cellular Mobile Operators was carried out. The assessment revealed an interesting growing trend regarding shift of revenues from voice to data. The report observed that though Voice revenues increased over the years, the growth rate of these revenues was on the decline. However, relating the drop off to increase in data services and usage of VoIP may not be correct as there could be multiple reasons for this decrease including cheap hourly voice packages. An analysis of the revenue generated from data services during the last four years showed that all operators experienced a growing trend in their incomes based on data services. However Pakistani mobile users are not mature enough that VoIP could pose a significant challenge to Voice revenue and data services which are more frequently used for browsing, using social networks and e-mails. Mobile VoIP is approaching the tipping point in some developed countries and it could pose a threat to our market also in terms of revenues from Voice services in future.

The good thing about current market in Pakistan is that the users are demanding both voice and data services together. This allows the operators to shape up their packages in a way that voice and data services are treated as complementary rather than competitors.

Accounting Separation

Accounting Separation requires enhanced transparency in the accounting arrangements of operators who are determined to have Significant Market Power (SMP) in the relevant markets. This information comes into focus in determining the rates that may be fairly charged by SMP operator from the competitors who seek to interconnect with SMP's network, as well as to check the element of cross subsidization and any other anti-competitive practices by the dominant operator. Accounting separation involves separate identification of all elements of revenue, cost, assets and liabilities related to various activities of SMP operator. Accounting Separation Regulations/Guidelines 2007 define detailed requirements in this regard.

PTCL, being SMP operator, submitted its separated accounts for the FY 2006-07 to the Authority on historical cost basis which may reflect inefficiencies developed over the years. Also, the asset base of PTCL is still reported on historical cost basis which may not be quite relevant keeping in view changes in telecom equipments. In order to move from historical cost to current cost basis, PTA directed PTCL to make necessary arrangements for submission by December 31, 2011 of its separated accounts for the FY 2010-11 on the basis of current cost.

Unification of LDI and LL licenses

A study was accomplished to deal with the challenge of bringing all the services under a Unified Licensing Regime, while maintaining a level playing field. The study covered current telecom licensing regime in Pakistan from the legal and regulatory aspect under the existing legislative framework, with an anticipatory overview of legal and regulatory issues of Unified Licensing to be faced by the policy makers and regulator in future prior its introduction. The scope of the study, however, was neither to discuss the technological issues or aspects of introducing the concept of Unified Licensing Regime nor the switching over process to Unified Access License in Pakistan, as the analysis aimed at determining the prospect of convergence of LDI and LL licenses under a single umbrella authorization and related regulatory issues.

Electronic and Data Protection Laws of Pakistan

Another study was conducted to investigate, discuss and give an overview of the prevailing legislations on electronic and data protection in Pakistan. In today's era of e-commerce, a lively discourse on the issues of electronic and data protection laws vis-à-vis the role and functions of distinct institutions is taking place in the country. But no adequate identification of the key laws and institutions dealing with these issues has been undertaken. The relevant laws include: Pakistan Telecom (Re-Organization) Act, Electronic Transactions Ordinance, Prevention of Electronic Crimes Ordinance, Payment Systems and Electronic Fund Transfers Act, and the Draft Electronic Data Protection and Safety Act of 2005. The study observed that providing valuable recommendations to the concerned quarters about the above laws was crucial. The study also put that pending bill on Electronic Crimes Law must be finalized on priority basis and the Draft "Electronic Data Protection and Safety Act 2005 should be reconsidered for debate and/or adoption by the Parliament.

Study on Near Field Communication

This comprehensive study was carried out to ascertain the prospects of implementation of "Near Field Communication" in Pakistan. A report on the subject covering the NFC technology, potential applications and the best international practices has been prepared which was circulated for in-house and industry consultations. In the light of the consultations, recommendations for use of NFC applications in Pakistan were made which include constituting an expert team, taking all stakeholders on board, sharing technology and its application with the State Bank of Pakistan, and constituting a research group by CMOs and PTA to deal with future challenges.

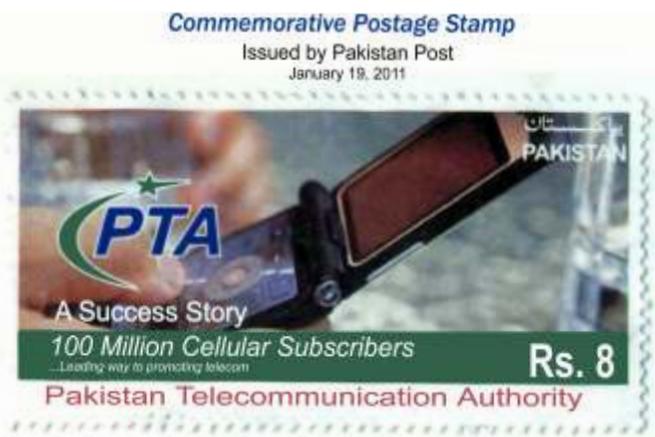
Achievements & Recognitions

Since its establishment, the Authority has been rising to the tests of time in many ways. Its impressive performance in achieving important landmarks in telecom sector coupled with ever increasing professional excellence has won national, regional and international accolades. PTA received the honour of being termed as the most progressive telecom Regulator in South Asia for the year. The Chairman of PTA was bestowed with the honour of being the best telecom Regulatory Leader of the year. PTA also achieved the overwhelming target of 100 million subscribers well before the stipulated time. This landmark achievement has been celebrated by the industry and nation on many forums.

Pakistan Reaches 100 Million Cellular Subscribers

On the occasion of achieving the mark of 100 million cellular subscribers, Chairman PTA presented the 100th million SIM to the Honourable Prime Minister of Pakistan, Syed Yusuf Raza Gilani on 30 September, 2010. The Prime Minister congratulated Pakistan Telecommunication Authority for achieving this admirable accomplishment. Pakistan Postal Services have also issued a Commemorative Postage Stamp on this historic event.

A mega event was organised at Pakistan National Council of Arts (PNCA), Islamabad on



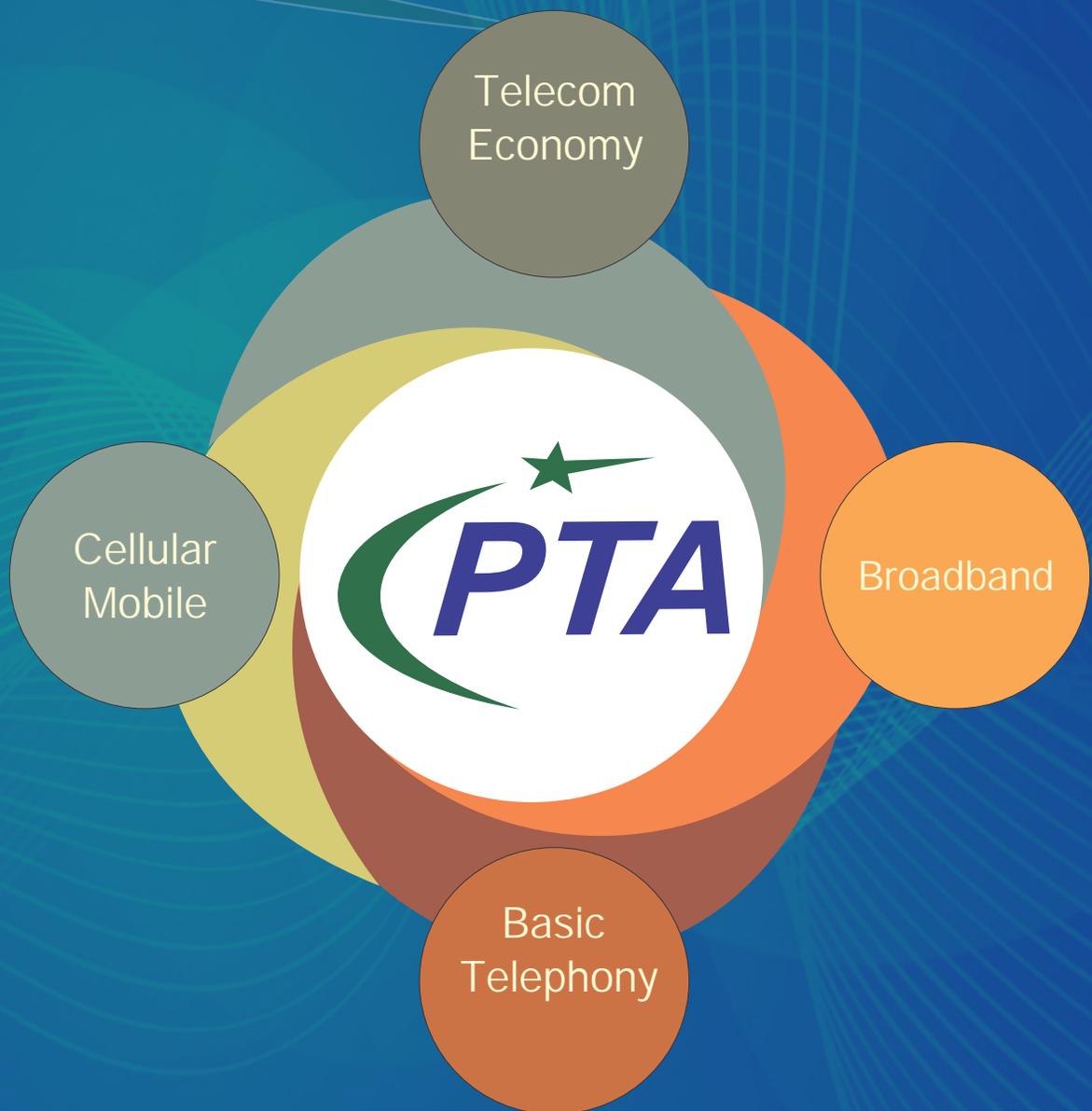
19 January, 2010 to celebrate the achievement. Prime Minister of Pakistan graced the occasion as the Chief Guest. Other eminent guests included Federal Minister for Information Technology & Telecom, Federal Ministers, Federal Secretaries, CEOs of telecom companies, heads of regulatory authorities, industry experts, and media representatives.

Best Telecom Regulator Awards

The Authority's performance won also international appreciation. The South Asian, Middle Eastern and North African Telecommunication Council (SAMENA) declared PTA as the Most Progressive Telecom Regulator in South Asia for the year, while Chairman PTA Dr. Mohammed Yaseen was acknowledged as the Best Telecom Regulatory Leader of the Year. These Awards were conferred in an exclusive ceremony held at Casablanca.

Chapter -2

Telecom Sector Review





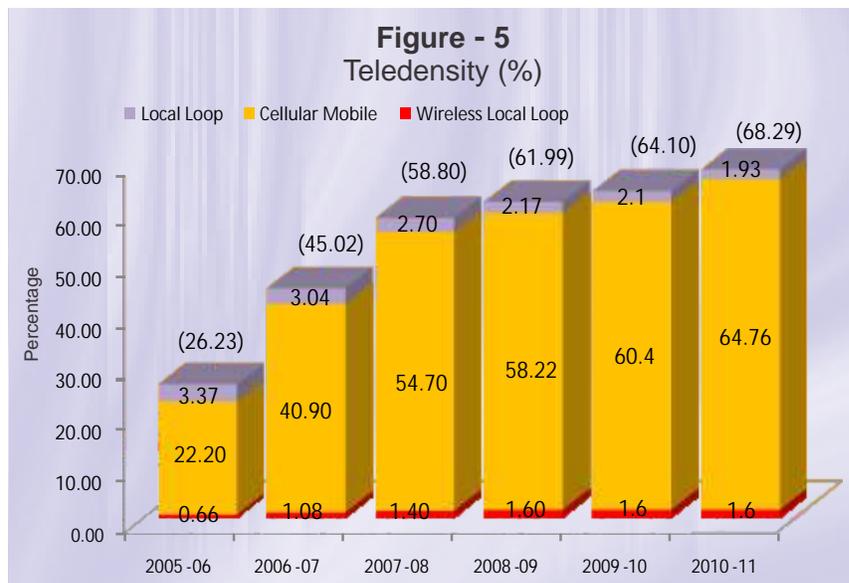
Telecom Sector Review

Telecom Economy

Pakistan economy faced adverse shocks in the FY 2011 including massive floods, oil and commodity price fluctuations, to mention only the major ones. According to an estimate made by the Government, last year's floods alone wiped out more than 2 percentage points of growth as more than 20 million people suffered displacement. The economic growth was registered at 2% against the target of 4% in the FY 2010¹. However, the telecom sector exhibited stability in the FY 2011 as its indicators displayed positive trends. Telecom revenue increased by 5.4% and tax collection shot up by 7.2% in the FY 2011 compared to the previous year.

Teledensity

At the end of FY 2011, teledensity of the country was recorded at 68.39%, demonstrating 6.7% expansion compared to the previous year. Since mobile sector contributes over 95% to the total teledensity of the country, an increase in mobile penetration from 60.4% (FY 2010) to 64.9% (FY 2011) resulted in improvement of 4.3 percentage points in total teledensity. Fixed Local Loop teledensity has been declining

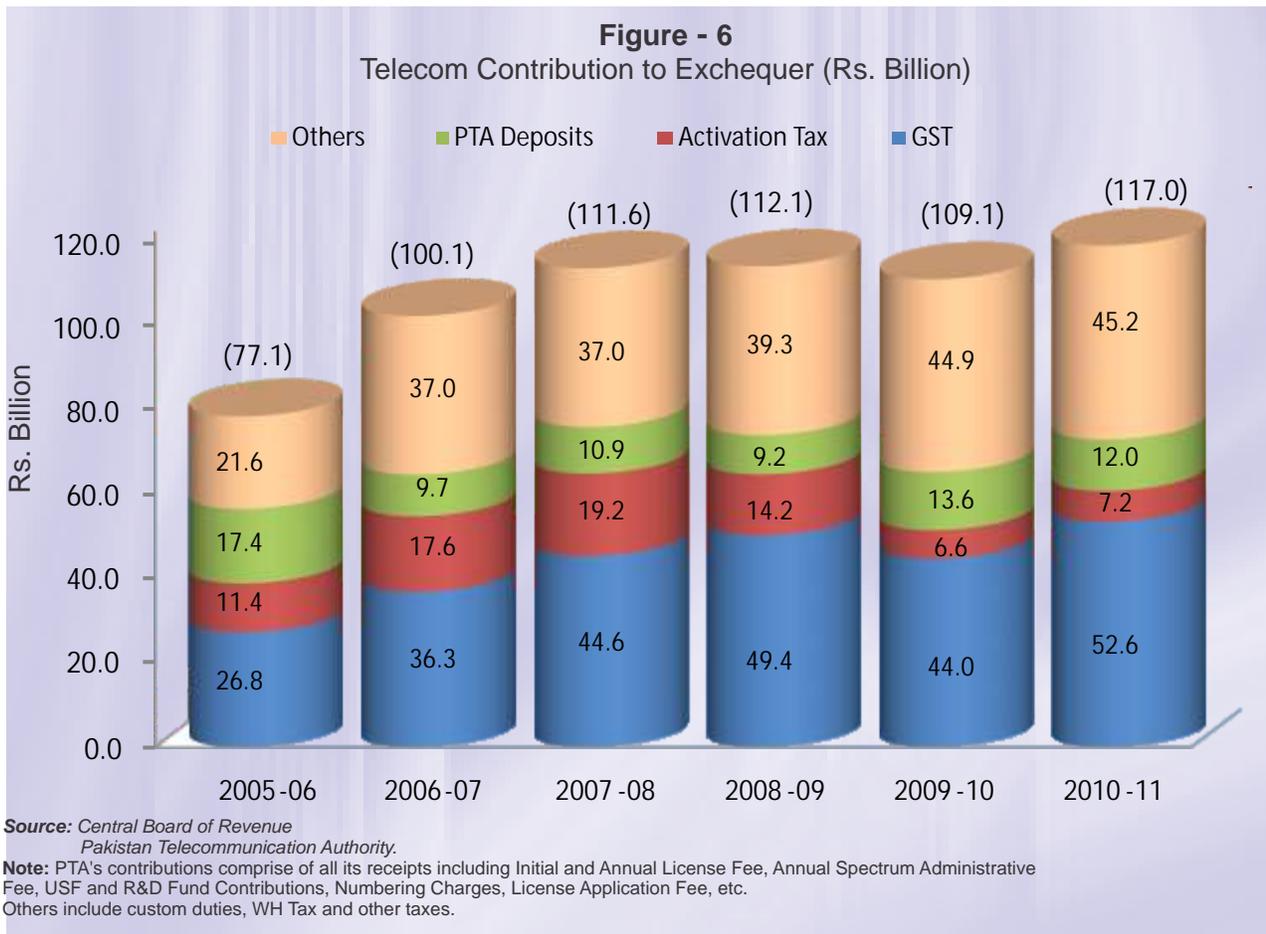


over the years owing to mobile substitution and today it stands at 1.93% (FY 2011) compared to 2.1% last year showing a shrinking of 0.17%. Wireless Local Loop subscribers have been increasing but the proportionate rise in population is keeping the teledensity of WLL services at 1.6% for the past three

¹ years
¹ Pakistan Economic Survey 2009-10, Ministry of Finance, Government of Pakistan

Contribution to the National Exchequer

Telecom sector is a significant contributor to the national exchequer depositing over Rs. 100 billion on average every year. An amount of Rs. 627 billion has been deposited in the national exchequer during the past six years. Telecom sector made its highest ever contribution to the national exchequer in the FY 2011 as around Rs. 117 billion were placed by the telecom companies and PTA while Rs. 109.1 billion were deposited in the kitty last year, showing 7% growth during FY 2011. The Authority alone has deposited over Rs. 72 billion in national exchequer during the last six years which include Initial and Annual License Fee, Annual Spectrum, USF and R&D Fund Contributions. However, a modest decline of Rs. 2 billion was witnessed since last year in PTA deposits owing to non-payment



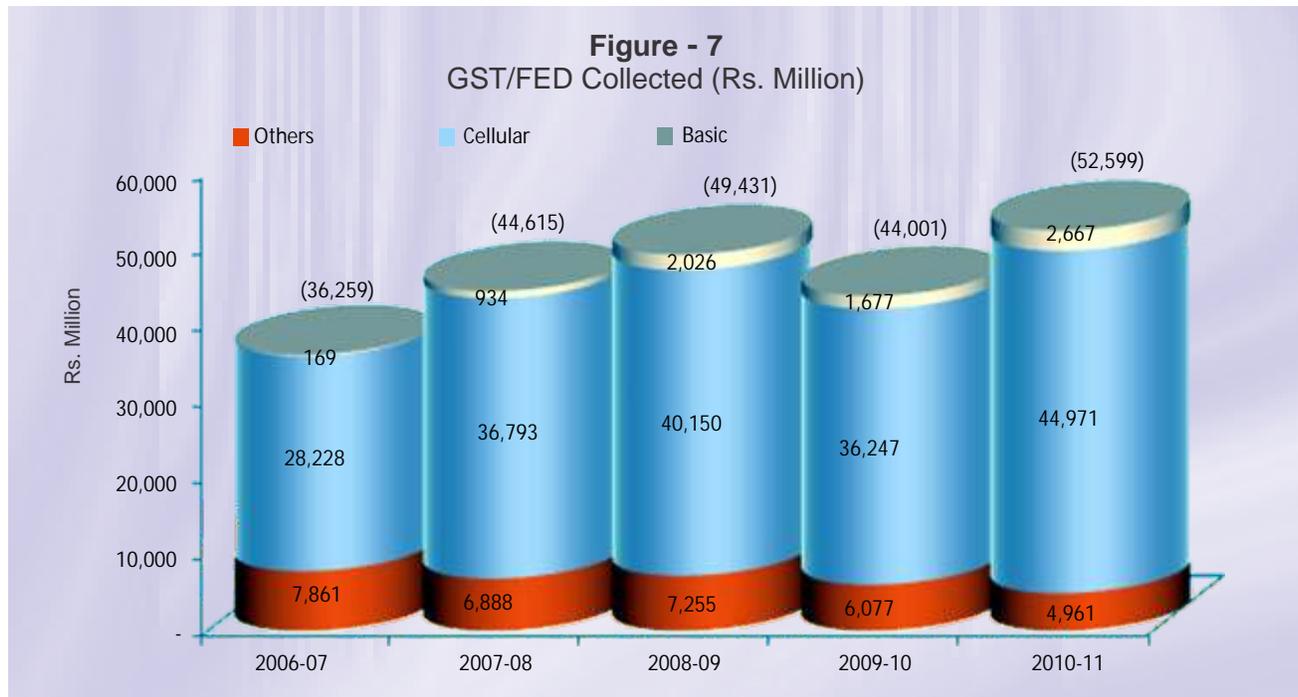
of APC for USF by a few telecom companies owing to litigations in the Court of Law.

Taxes

Tax collection from telecom sector remained the principal contributor in the total taxes received by the Government. Telecom sector has more than 93% share in total GST/FED collection from services sector. During FY 2011 telecom companies contributed Rs. 52.6 billion in the form of GST/FED, 20% more than Rs. 44 billion contributed in FY 2010.

If one looks at the share of each service in total GST/FED collected from telecom sector, it is seen that cellular services contributed Rs. 44.9 billion (FY 2011) compared to Rs. 36.2 billion (FY 2010),

reflecting an increase of 25% in one year. As Basic Services have been exhibiting slow growth their GST collections dropped by 18%. Apart from GST/FED, activation tax collections also spiked from Rs. 6.6 billion (FY 2010) to Rs 7.1 billion (FY 2011) owing to improvement in net addition in mobile subscribers

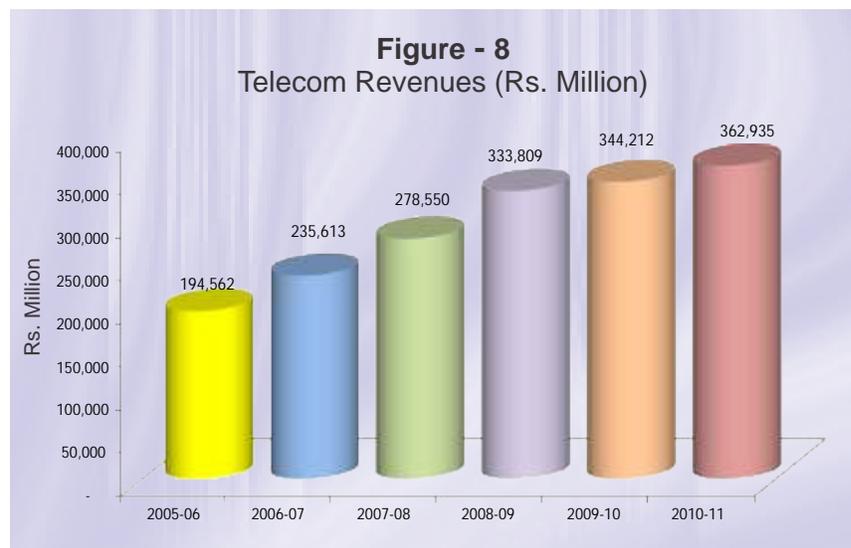


base.

Telecom Revenues

Revenues of the telecom sector reached all time high during the FY 2011 as these touched the mark of around Rs. 363 billion, registering boost of 5.4% compared to the year before. In proportion to the teledensity, cellular sector has the highest share in telecom revenues. During FY 2011, cellular revenues enhanced by 11% to reach Rs. 262,761 million in comparison with Rs. 236,047 million last year. Rise in telecom revenues is mainly attributed to the swelling

of revenues of mobile services, as other services except WLL have reported reduction in their total revenues.



Telecom Investment

Advancement in technology and new innovations require continuous investment stream into the

telecom sector. Although companies have invested over US\$ 12 billion in building the infrastructure and other projects during the past six years, there exist untouched lands which need improved or new infrastructure. PTA has worked out with both operators and USF investments in areas where there is no telecom service. While most of the telecom companies have established infrastructure in most parts of the country, they are reluctant to invest in certain areas due to difficult terrain, security factors and unattractive business prospects. During FY 2011, telecom sector invested US\$ 495.8 million with cellular mobile sector being the leading contributor. In addition, USF invested Rs. 3.5 billion in unserved and underserved areas.

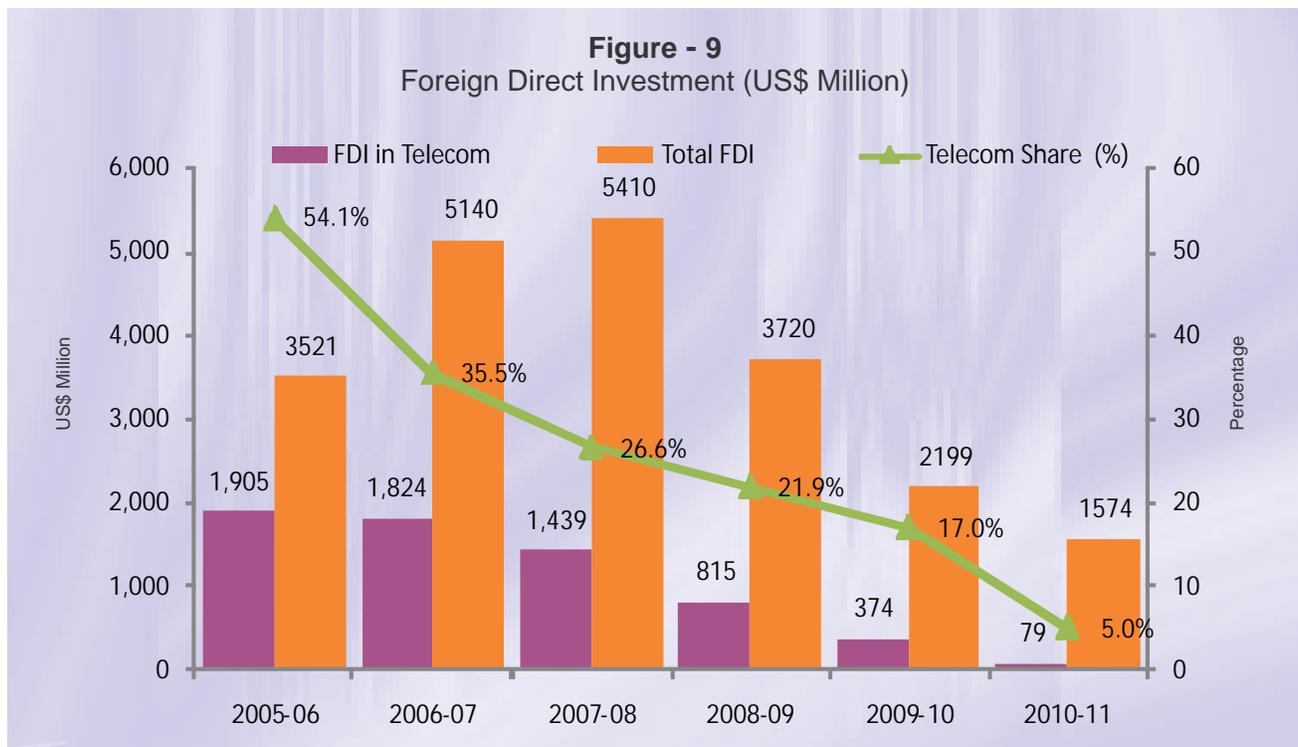
Table - 9
Telecom Investment

US\$ (Million)

Operators	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Cellular	1,420.9	2,584.5	2,337.7	1,229.75	908.8	358.6
LDI	50.5	602.8	403.9	276.75	183.1	108.8
LL	0.3	40.6	342.1	57.37	22.5	18.2
WLL	259.4	747.0	52.8	82.11	23.0	10.2
Total	1,731.1	3,974.8	3,136.4	1,645.98	1,137.51	495.81

Despite challenges on the domestic scene, Foreign Direct Investment (FDI) showed an encouraging trend as FDI by the telecom companies was more than 30% of the total FDI landed in the country during the last six years. Telecom companies reduced FDI as they had already established their infrastructure. In FY 2011, telecom sector attracted over US\$ 79 million FDI in the country which is about 5% of the total FDI which came to Pakistan.

Analysis of FDI reveals that the telecom sector of Pakistan needs more investment to boost these figures in the near future. An ideal case could be the auction of 3G licenses which is expected to bring



much needed FDI in the country. Better economic and security conditions in the country will further coax the investors to bring capital into Pakistan.

Telecom Imports

Telecom sector imports showed an upward trend as these jumped to US\$ 766.3 million from US\$ 725.7 million in the year before. After getting relief in regulatory duty on the imports of cellular mobile handsets, mobile imports grew to US\$ 218 million in the FY 2011 as compared to US\$ 169 million in the

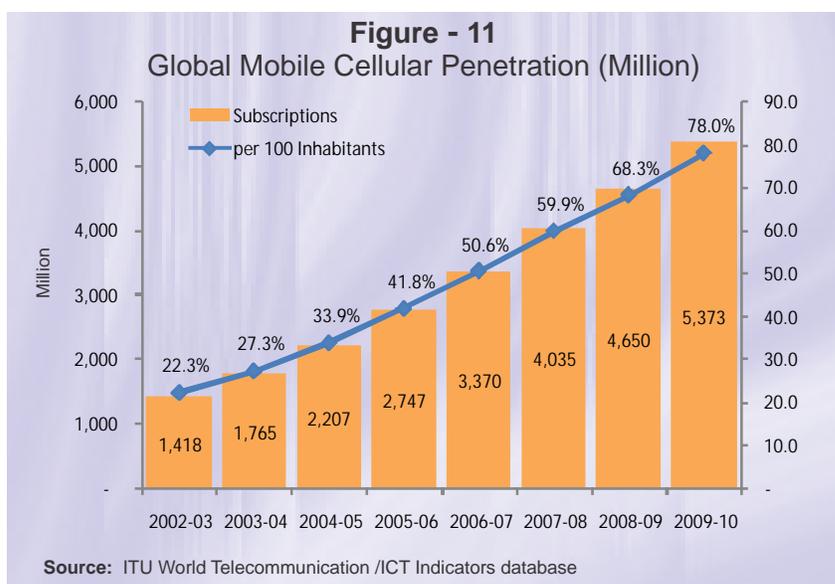
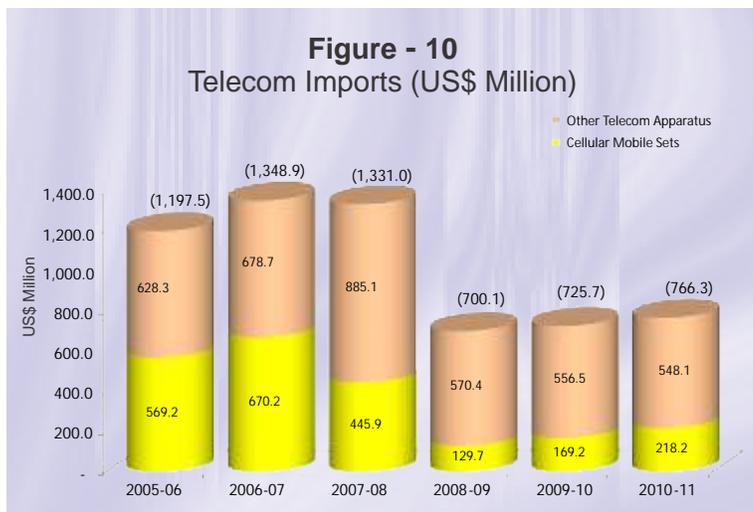
previous year. The import of telecommunication apparatus which include machinery and Fixed Wireless terminals reduced to US\$ 548 million in FY2011 as compared to US\$ 556 million in the

Cellular Mobile

Cellular mobile services with their universal presence have revolutionized the communication priorities of the users around the world. The technological prowess of a country today is often measured by its telecommunication abilities, with mobile cellular penetration as the most significant indicator. According to latest statistics from ITU (Figure-11), there are 5.4 billion cellular subscribers in the world with 78% (2010) penetration.

Despite odds, cellular mobile sector of Pakistan performed well during the FY 2011, under the patronage of the Government and tenacious efforts of the cellular mobile industry and the regulator.

The cellular sector had to face tough economic and business environment during the last fiscal year due to heavy taxes, soaring inflation, power crisis, security situation, extensive subscriber churn and natural calamities. Despite these difficulties, the cellular industry managed to double its growth rate. Within six years of the deregulation of telecom sector in Pakistan, the landmark of 100 million cellular subscribers was achieved in July 2010. The mainstay of this rapid growth was the stringent competition among the cellular mobile operators which paved the way for lower tariffs and maximum geographical coverage. According to the World Economic Forum's Global Information Technology Report 2010-11, Pakistan ranks no. 1 in the Internet and Telephony Competition².



²<http://www.weforum.org/reports>

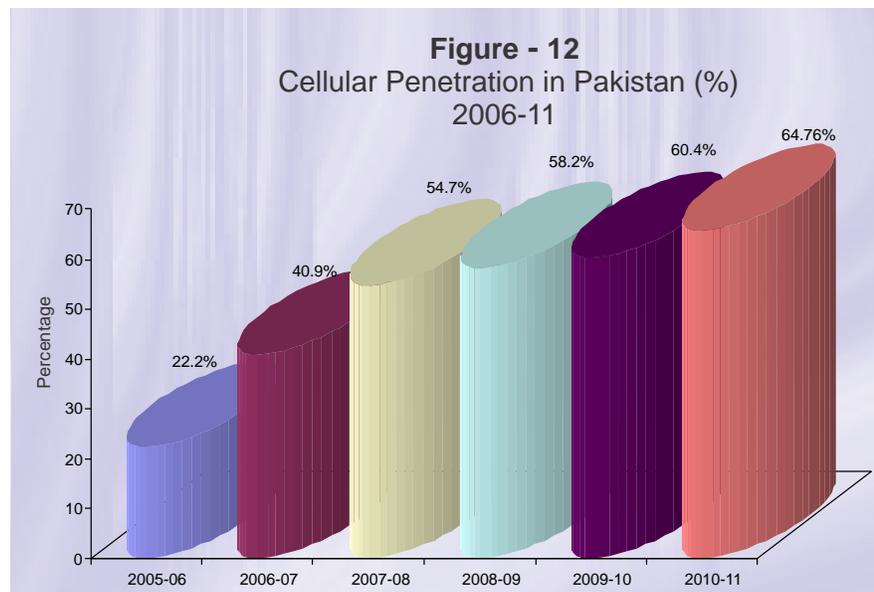
Cellular mobile operators of Pakistan continued to offer innovative and exciting packages to the customers. Cellular companies introduced a broad array of voice and SMS packages to target potential clientele. Data and value added services were given increasingly high importance in advertising campaigns. Cellular operators joined hands with leading smart phone manufacturers to bring their latest brands to Pakistan. Cellular companies also used mobile platform to deliver innovative services including mobile banking, accidental insurance, international remittance service, mobile newspaper service, and application stores. The encouraging uptake of these data services is indicative of the potential of Pakistan's cellular market to exploit new avenues for revenue generation. Therefore, 3G licensing is an essential need of the cellular industry as it will provide a mode for delivery of high quality ICT data services, in addition to producing more revenues.

As the regulator places a high premium on consumer protection and facilitation, a range of services were introduced including '789', '667', '668', unwanted number blocking, SIM protection against identity theft and fraudulent calls/SMSs. In view of the prevailing security situation in the country, PTA ensured that cellular mobile operators kept their database on subscriber antecedents updated, and blocked unverified SIMs according to the SOPs.

There are strong reasons to anticipate further boom in cellular industry in the near future, mostly due to upcoming 3G licensing. Voice has long been the forte of cellular mobile services but with the appearance of smart phones and advanced data connectivity solutions through mobile platforms, data is set to become the new horizon of success for the cellular services in Pakistan. PTA's vision to spread awareness about data services potential and promote the latest technological trends in telecom, will improve the ICT portfolio of the country in the days ahead.

Mobile Penetration

Penetration is one of the key yardsticks of a successful mobile market. Pakistan is considered to have shown impressive mobile penetration rate if appraised in the backdrop of emerging markets. Today mobile penetration in the country stands at 65.9% (FY 2011) in comparison with 60.4% (FY 2010), depicting growth of 9%. The cellular industry thrived at an astonishing pace till 2008 when signs of maturity began to emerge in the sector. Since then, penetration rate has slowed down. However, the sector demonstrated strong resilience and improved the net additions of subscribers which had a positive effect on all major indicators of the industry.



Mobile Subscription

Cellular market of Pakistan witnessed tremendous growth rates of over 170% just after the deregulation in 2004. Since then, the trend has persisted to the present times.

At the end of FY 2011, the number of mobile subscribers reached 108.99 million while there were 99.2 million subscribers during the corresponding period in the year before. There are over 98% prepaid subscribers mainly because of the innate characteristics including no security deposit or line rent, low income, credit control, easy availability and small top up.

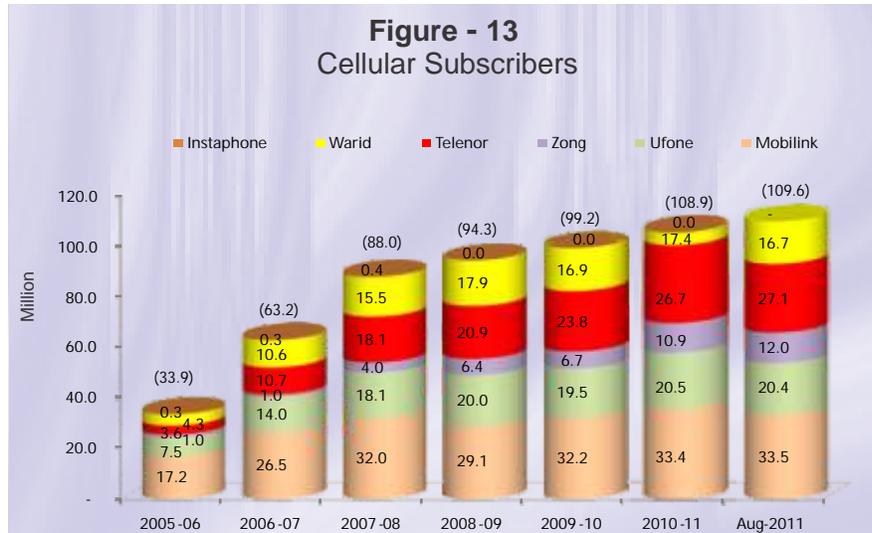
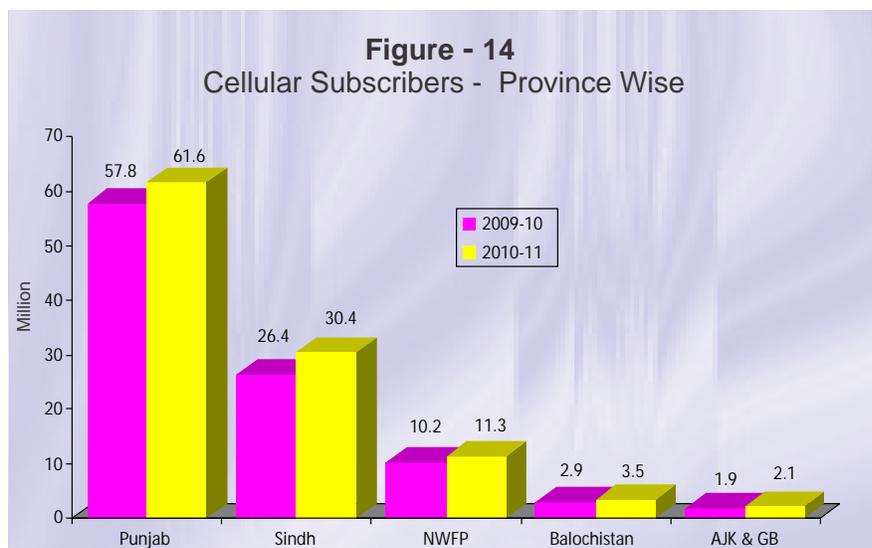


Figure-14 shows the Province-wise cellular clientele during the past two years. All the Provinces of Pakistan displayed positive growth in customers during FY 2011. Punjab being the most populous province of the country held the maximum share of subscribers i.e. 57%. Sindh had half the chunk of Punjab's subscribers i.e. 28% while Khyber Pakhtunkhwa showed a share of 10% in the nationwide cellular mobile subscribers. Balochistan had 3% portion while AJK & Gilgit-Baltistan held 2% cellular subscriber share. During the last fiscal year, provincial distribution of cellular subscribers remained almost the same as in the financial year before.



During the last fiscal year, provincial distribution of cellular subscribers remained almost the same as in the financial year before.

Net Additions

The figures of Cellular subscriber net addition are true portrayal of the market trends in the post deregulation era. Hefty net additions were witnessed till 2008, however, market took a massive plunge afterwards. The FY 2011 marks the return of high net addition figures as almost a million new subscribers joined the cellular subscriber league.

During the year under review, the cellular operators added 9.7 million subscribers to their networks showing 100% growth against a drop of 24% last year. Despite being the smallest operator, CMPak

came out as the fastest growing operator in terms of net addition as this company got almost 4.2 million subscribers during FY 2011. Though Telenor and Mobilink put in 2.9 million and 1.2 million subscribers, respectively, yet their combined net additions fell short of that of CMPak. Ufone and Warid trailed behind with 0.9 million and 0.5 million new subscribers, respectively. Table-7 shows the company-wise net subscriber additions during the last seven years.

Table - 10
Net Subscriber Additions by Cellular Operators

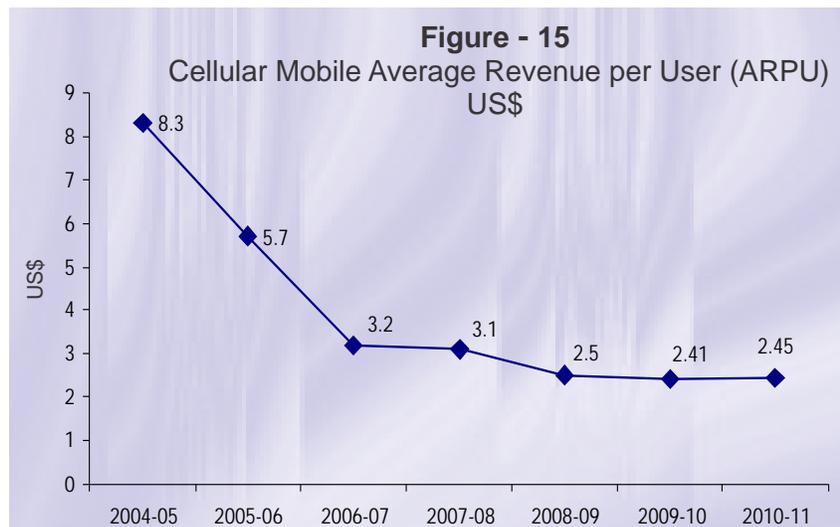
	Mobilink	Ufone	CMPak	Instaphone	Telenor	Warid	Total
2004-05	4,253,096	1,777,943	454,465	-81,591	835,727	508,655	7,748,295
2005-06	9,736,470	4,907,902	116,017	-117,451	2,737,933	4,354,483	21,735,354
2006-07	9,260,896	6,527,039	-15,940	-3,615	7,127,672	5,757,248	28,653,300
2007-08	5,565,912	4,086,396	2,926,195	18,054	7,423,857	4,869,472	24,859,955
2008-09	2,895,524	1,904,267	2,435,813	-317,087	2,767,940	2,396,878	6,322,218
2009-10	3,065,709	-455,607	317,717	-34,048	2,905,092	-955,049	4,843,814
2010-11	1,175,613	984,687	4,223,405	--	2,868,858	456,111	9,708,674

PTA's regulatory measures for correct reporting of the telecom statistics through Active Subscriber Definition and subscriber verification mechanisms have been helpful in addressing security concerns of the country at the minor expense of slow subscriber growth and net additions. PTA not only issued detailed SOPs to the mobile operators on subscriber verification but also launched an aggressive media campaign to educate the people about the importance and procedure of owning a SIM in their name. PTA and telecom industry stood shoulder to shoulder with the law enforcement agencies to combat terrorism by curtailing misuse of subscriber antecedents.

Average Revenue per User

Average Revenue Per User (ARPU) is an important pointer to gauge the financial health of the sector.

ARPU is measured by dividing total revenues of the industry over total subscribers which implies that if revenues and subscribers increase by the same percentage, ARPU will remain the same. In case revenue increases faster than the customers, ARPU of the industry will grow while ARPU will decrease if subscribers multiply faster than the revenues. Emerging economies of the world especially Asian



economies experienced exponential growth in their subscriber base in the aftermath of deregulation. Cellular companies focussed on subscriber market share strategies rather than high ARPU

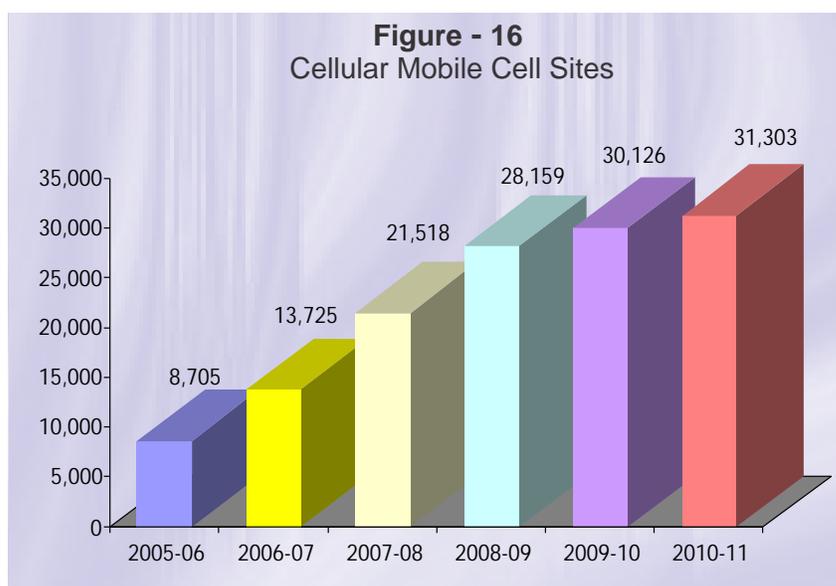
strategies. As a result, subscriber growth of companies outweighed their revenue growth. For instance in India, GSM Subscribers increased from 69 million in 2006 to 698 million in 2011 while ARPU declined from Rs. 366 to Rs. 100 during the same period³. The Strategy Analytics⁴, a research and market intelligence firm, in its Tariff and Revenue Strategies insight has recently analyzed the declining mobile ARPUs. The analysis of six countries including France, Germany, Italy, Spain, UK and USA identified factors which were pushing down the ARPUs. One of the major factors turned out to be the decreasing mobile termination rates which resulted in diminished revenues per minute while the traffic was on the rise. It has therefore lowered voice ARPUs ranges from 23% to 60% (in selected countries). The analysts predicted that lowered Voice ARPUs would be balanced out with increase in data services but high data tariffs and low speed did not let the data ARPUs come into play thus retarding the growth of mobile industry ARPUs. It is however, anticipated that the emerging markets will take time to witness increase in Data ARPUs and balance out decrease in voice ARPUs.

For almost fifteen years, Pakistan's cellular market exhibited high ARPU owing to high call rates and low competition in the market. Since deregulation of sector, hard competition in the cellular market has given rise to aggressive price war among the operators to gain maximum market share. As tariffs declined significantly, a tremendous rise in subscriber base brought ARPU down to US\$ 2.5 in 2011 from US\$ 8.3 in 2005.

Network Coverage

One of the key indicators of a successful and advanced cellular market in a country is the geographical coverage by the cellular mobile operators. Despite a diverse topography in Pakistan, more than 92% of the land area is dotted with cellular mobile services a laudable feat by the mobile companies. Currently, there are 31,303 cell sites in Pakistan while in 2010 total cell sites were calculated to be 30,126. Mobilink has the maximum number of sites in the country followed by Telenor and Ufone.

In order to maximize coverage, PTA encouraged the cellular mobile operators to share infrastructure. Consequently, all five cellular mobile operators, under the patronage of PTA, signed Memorandum of understand to share cell sites and improve tenancy ratio. Under the MoU, each operator is obliged to put in its best efforts to make commercial arrangements to take up its own and overall industry's Tenancy Ratio to a level of 1.5 within next 3 years with yearly benchmarks aimed at 1.1, and 1.3 for the first and second years respectively, provided the same is technically feasible for



³<http://www.trai.in> (ARPU in Indian Rupees)
⁴<http://www.Strategyanalytics.com/>

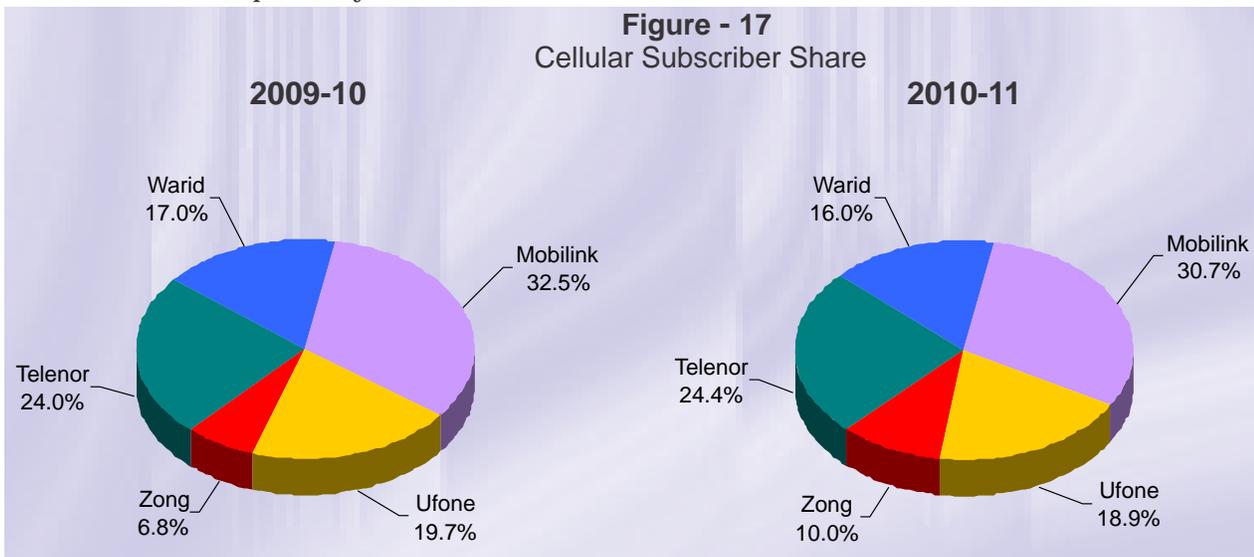
the operator(s). Sharing of infrastructure will expand coverage of all operators and enhance the quality of service.

Another important development in this regard is the interest evinced by cellular operators in erecting solar powered or Green BTS. Warid was the first telecom operator which installed solar powered base stations in the country in 2008. Telenor is the first company to complete largest solar-powered communication network under Universal Service Fund-assisted areas. It inked an agreement with Nokia Siemens for the installation of equipments that run on solar energy. CMPak is working aggressively and is close to completing 100 solar cell sites. The deployment of solar powered stations would be of immense help, particularly in reducing pressures on the energy in Pakistan.

Market Share

Market share of cellular industry reflects the extent of competition in the market and determines the SMP operator. Market share can be described in terms of clientele and revenues.

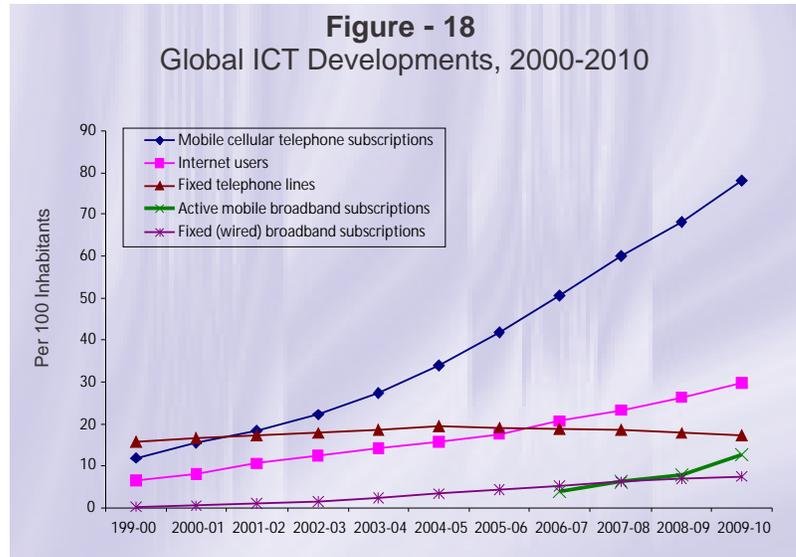
Mobilink maintained its position as the leader in subscriber market with 30.7% share in FY 2011 though its share declined by 1.8 percentage points compared to previous year when it was 32.5%. Market share of Telenor increased slightly to 24.5% at the end of June, 2011. The highest growth in market share for FY 2011 was shown by CMPak which managed to increase its share from 6.8% last year to 10% during 2011. Market shares of Ufone and Warid dropped again this year which were 18.9% and 16%, respectively.



Basic Telephony

Since the inception of Pakistan, local loop services, especially fixed local loop, have been used as the only communication medium by the people. However, with innovation in the telecommunications, new paradigms of communication have appeared which have challenged the existing telecom services. Wireless services both local loop and mobile, sprung to enormous popularity owing to ease of mobility, cost effective deployment and hassle free procedures to acquire connections.

With the dawn of new millennium, local loop services faced threat to their century old dominance in the form of mobile and internet services. According to International Telecommunication Union (ITU) (Figure-18) there were only 0.7 billion cellular mobile connections and 0.97 billion fixed lines in the world in 2000. However, within ten years, mobile cellular subscriptions shot to astonishing 5.4 billion worldwide while fixed line connections are only 1.2 billions⁵. This comparison clearly proves the point that mobile cellular services are the preferred medium of communication in the world.

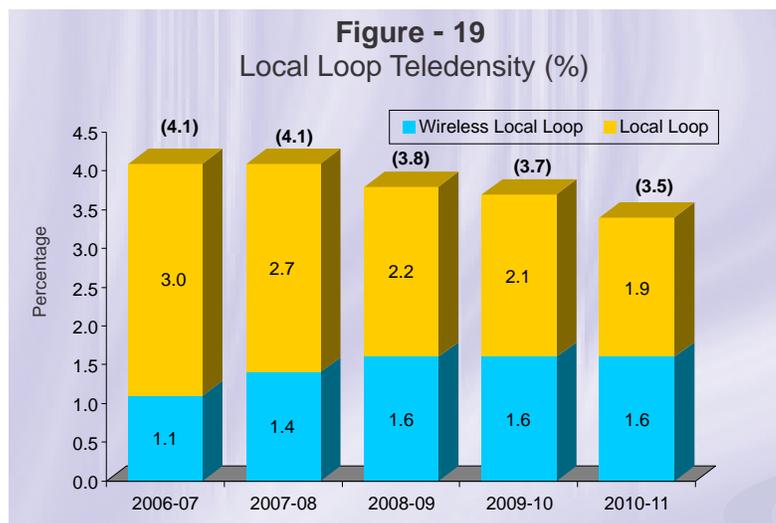


PTA issued many licenses to operators for Local Loop and WLL services, however, these operators could not roll out the infrastructure rapidly due to costly deployment, lack of resources and competition with mobile services. PTCL remained the topper both in FLL and WLL services in local loop services. PTCL has over 6 million installed capacity and is striving hard to improve its fixed line subscriptions. To this end, PTCL declared the FY 2010 as the “year of customer care and gain” directing all efforts towards retaining existing customers, offering incentives for restoration of lost customers, and introducing new simplified procedure for landline restoration. A number of packages including Landline Ramadan Promotion, Double Advantage, Super Sunday Offer, Double up Unlimited Package were offered to the landline customers to suit their specific needs and demands.

WLL companies are enhancing their subscriptions with every passing year. PTCL and Wateen have performed exceptionally well in WLL segment by adding the highest number of clients while WorldCall lost a major portion of its WLL subscribers, possibly due to subscriber churn.

Local Loop Teledensity

For the last three years, local loop teledensity of Pakistan has been descending in accordance with the global trend where customers are turning towards wireless base services. Currently, LL teledensity in Pakistan stands at 3.5%, which consists of 1.9% FLL and 1.6% of WLL till the end of FY2011. The figure shows a sharp contrast between the growth of FLL and WLL industry. FLL sector has declined from 3% in FY 2007 to 1.9% in

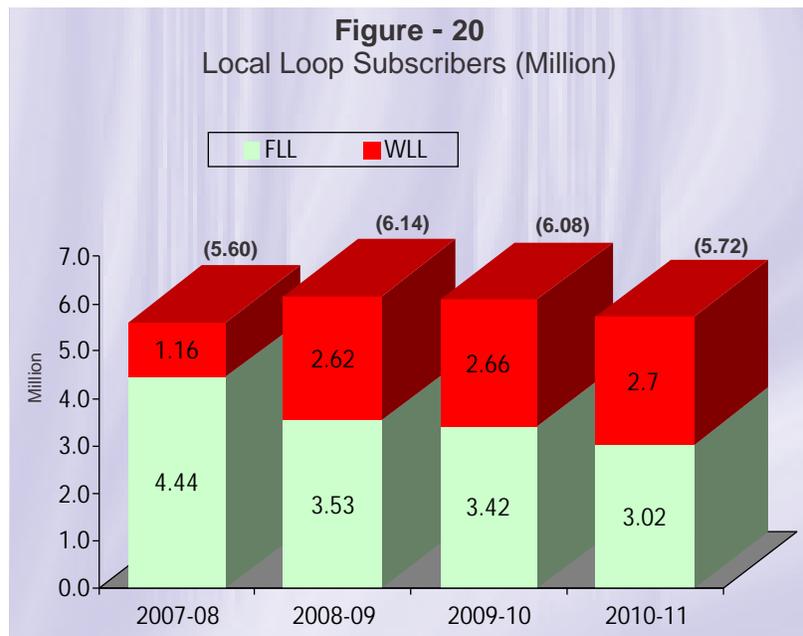


⁵<http://www.itu.int/ITU-D/ict/statistics/>

FY 2011 while WLL sector has expanded its penetration from 1.1% to 1.6% during the same period. The fall in teledensity is due to the sharp decline in the local loop subscribers of PTCL and WorldCall. Although the number of WLL customers has actually inflated, the pace of population growth outweighed increase in WLL subscription which did not translate into significant impact on its teledensity.

Local Loop Subscribers

Figure shows the declining trend in local loop subscribers, especially FLL services over the years. By the end of FY 2011, the number of Local Loop (FLL & WLL) subscribers reached 5.72 million all over Pakistan including AJK & GB. This also included connections of new local loop operators. Out of total 5.72 million subscribers, 3.02 million belong to FLL and 2.70 million to WLL. The total local loop customers including fixed and wireless were calculated to be 6.08 million in FY 2010 presenting a fall of 6% during the FY 2011 caused mostly by deceleration in the FLL sector. The decrease in FLL subscribers during FY 2011 is estimated to be over 11%, mainly because of PTCL's loss of 386,958 fixed local loop subscribers. During FY 2011, wireless subscribers bulged by 1.7% while PTCL added 119,184 users in WLL during the reported period. Wateen and Link Direct also added 66,926 and 8,944 customers, respectively to total WLL subscriber base.



Over the years, WLL companies have managed to enlarge their market share in local loop services and today an intense competition goes on between FLL and WLL companies in the local loop market. WLL industry appears to be performing much better than the FLL services, if one looks at market share of both services. WLL now has up to 47% market share, while fixed line share is 53%. Since WLL and FLL sectors also serve as carrier of broadband services, their subscriber trend is strikingly similar to that of broadband services where wireless broadband services have taken over the fixed broadband technologies.

Long Distance and International

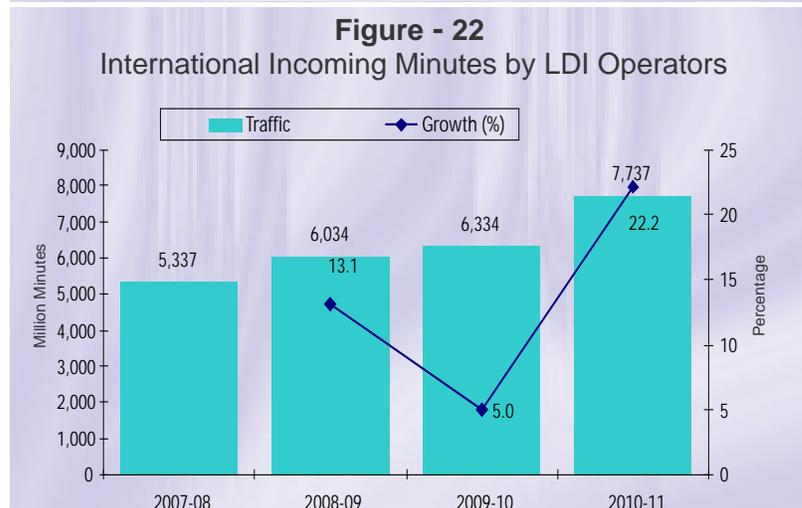
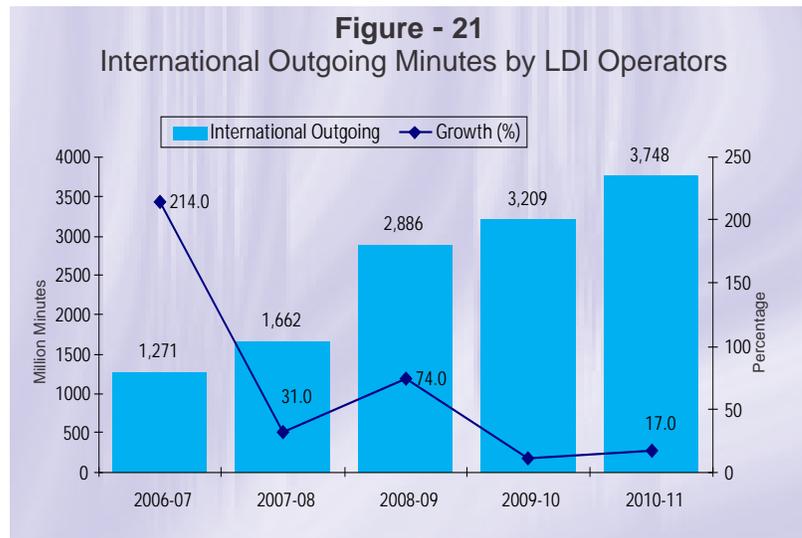
The Long Distance and International (LDI) is another pillar of Pakistan telecom sector, responsible for carrying international traffic to and from Pakistan. LDI licensees are responsible for receiving international traffic from other countries and hand it over to their respective LL/mobile operator for nationwide long distance and international telephony service. LDI companies are also major contributors to telecom revenues. PTA awarded 14 licenses for Long Distance and International

services and currently 13 of them are operational. PTCL is the largest LDI operator in the country as it also owns the international backhaul of Pakistan while other major players include Link Direct, Wateen, WorldCall and Telecard.

International traffic in Pakistan is increasing every year owing to lower tariffs and availability of international connectivity through fiber optic and satellite links. International connectivity is playing a central role in communications to and from Pakistan. Pakistan has four international fiber optic links namely, SEAMEWE-3, SEAMEWE-4, TWA and IMEWE which carry voice and data to and from Pakistan. In addition to these, submarine and satellite links, other alternative for international connectivity are also in place, but the cost factor makes optical fiber links a preferred choice for the telecom companies.

The total international traffic (incoming and outgoing) reached a record high 11.4 billion minutes during the FY 2011 compared to 9.5 billion minutes a year before, achieving 20% growth.

The international outgoing traffic in Pakistan is increasing continuously as 3.74 billion international minutes were recorded during the FY 2011. In comparison with 3.2 billion international outgoing minutes in FY 2010, a growth of 17% has been achieved by the LDI industry.



Broadband

Broadband is more than a communication technology; it is a significant economic stimulus for any country as changing dynamics of the world economy rely heavily on well connected economic resources of a country. Advanced content, high quality mediums, reliable infrastructure and well-linked information repositories determine the future of country's economy by providing right information delivered through reliable and secure communication links at the right time.

According to Point Topic, a leading source on global broadband statistics, there were 523 million broadband subscribers at the end of 2010, with 9% global penetration. Technology wise, DSL is the most potent broadband technology with 63% share in the world broadband market, followed by cable modem at 20% and fiber based connections at 14%.

Table-11 shows country wise share of Broadband subscribers in Global Broadband Subscriber base. According to Point Topic estimates, almost 72% of the global broadband subscriptions reside in developed economies including USA and Europe, creating an enormous digital divide between the developing countries and developed world. There is need for the developing countries to chalk out ICT strategies and broadband policies to narrow down this gap. China dominates global broadband subscription figure with 26.1% share in the world while USA has 16.7% share.

Broadband market in Pakistan underwent a great degree of technological and strategic transformation during the last fiscal year. Competition in the broadband market intensified with the introduction of new operator Qubee, launching its WiMAX based broadband services in Pakistan. PTA's soft licenses, terms and conditions facilitated access of the latest broadband technologies to Pakistan which highlights tremendous potential in broadband sector. Presently, a wide collection of technologies for broadband is available to customers including DSL, WiMAX, FTTH, EvDO, HFC and VDSL2. Pakistan excelled on the global broadband technology landscape once again when PTCL became the first operator in the world to use 'VDSL2 Bonding' technology under the brand name 'PTCL Ultra Net' which can provide bandwidth up to 50 Mbps on its existing Copper network for broadband customers. Earlier, Wateen had launched World's first commercial WiMAX network in Pakistan in 2007. First of its kind in the country, Qubee has introduced prepaid broadband internet packages mostly targeting the students, youth and low income segments of the population. PTCL deployed in Karachi its first ever Fiber to Home service based on Gigabit Passive Optical Network (GPON) technology. USF continued to extend its outreach by delivering almost 300,000 new broadband connections in USF areas. In addition, 821 Educational Broadband Centers (EBC) in different HSS/Colleges and 246 Community Broadband Centers (CBC) have also been established by USF.

The combined efforts of the Government, PTA and broadband industry are directed towards expanding the broadband penetration in Pakistan. However, broadband penetration level in the country still hovers around 1% of the population notwithstanding strong competition in the market, lower tariffs, government initiatives and technological edge. This situation calls for concerted push on the part of operators and the regulator alike. Scores of analyses, studies and industry

Table - 11
Global Broadband Subscribers (% of total)

Country	% of Total BB Subscribers
China (all territories)	26.1%
USA	16.7%
Japan	6.6%
Germany	5.1%
France	3.8%
UK	3.7%
South Korea	3.3%
Italy	2.7%
Brazil	2.4%
Russia	2.2%
Others	27.4%

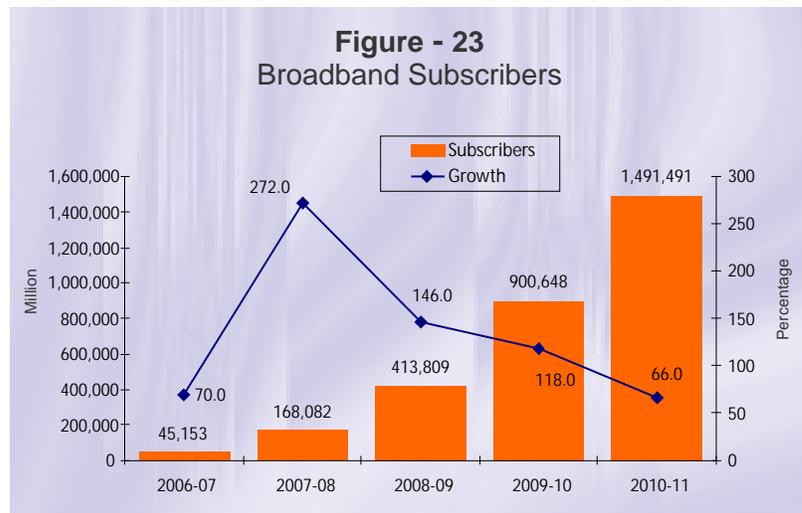
Source: Point Topic

consultations have been carried out at PTA to assess the root causes of slow growth in broadband penetration.

Subscriber Mix

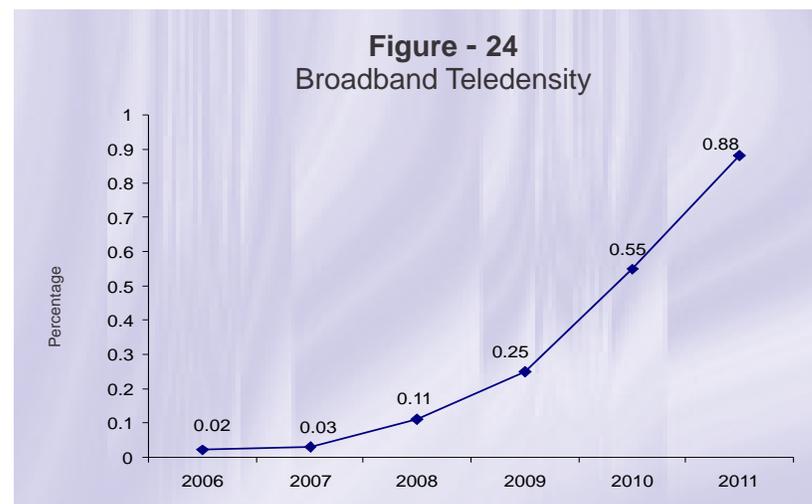
Broadband customer growth has been over 150% on average for the past four years. Such an overwhelming growth rate proves the great potential in Pakistan's broadband market. Broadband subscribers have crossed the one million mark with highest net additions in a year.

According to the latest market data, the tally of Broadband users reached 1.5 million compared to 900,648 at the end of FY 2010. Growth rate for the current period was at 66%, less than 118% of the previous year. However, 590,843 new subscribers have been registered by the broadband companies during the FY 2011, breaking the record for the highest net additions during last fiscal year.



Penetration

Penetration level of broadband industry stood at 0.88% at the end of FY 2011 compared to 0.55% in June 2010. Figure-24 illustrates the trend of broadband penetration in Pakistan since its entry into broadband market in 2006. The subsequent rise in proliferation level pertains to the introduction of new technologies and operators from time to time. Although over the last few years, subscriber growth remained over 150% on average, a significant rise in penetration is likely in a couple of years with the steadfast efforts of regulator and industry to facilitate broadband growth. According to PTA estimates, Broadband penetration would reach 10% by the year 2020.



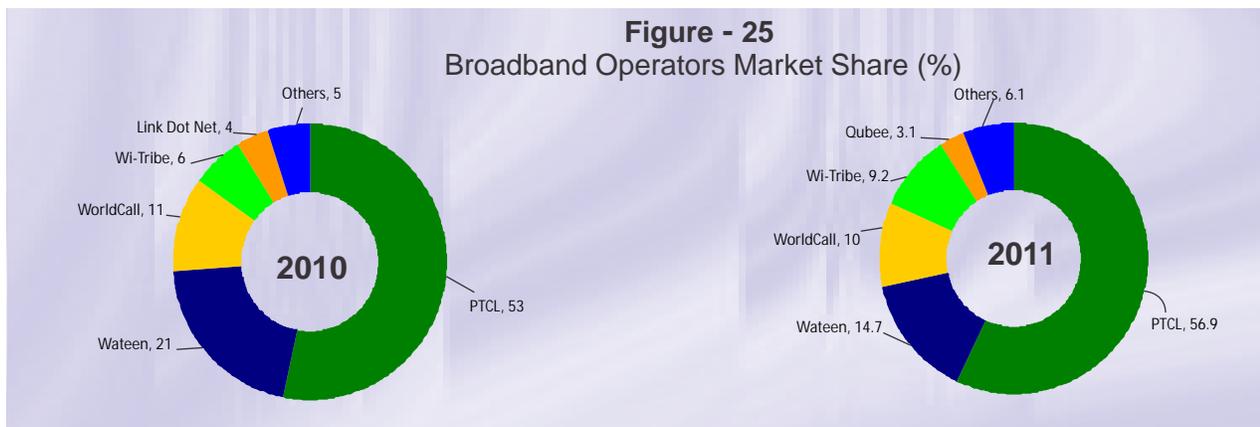
Broadband Players

PTCL retained its status as market leader with 848,379 subscribers representing 78% growth and 57% market share from its DSL and EvDO services. Wateen had a sluggish year depicting only 16% growth with a count of 218,506 subscribers and 15% market portion. WorldCall, the third biggest company

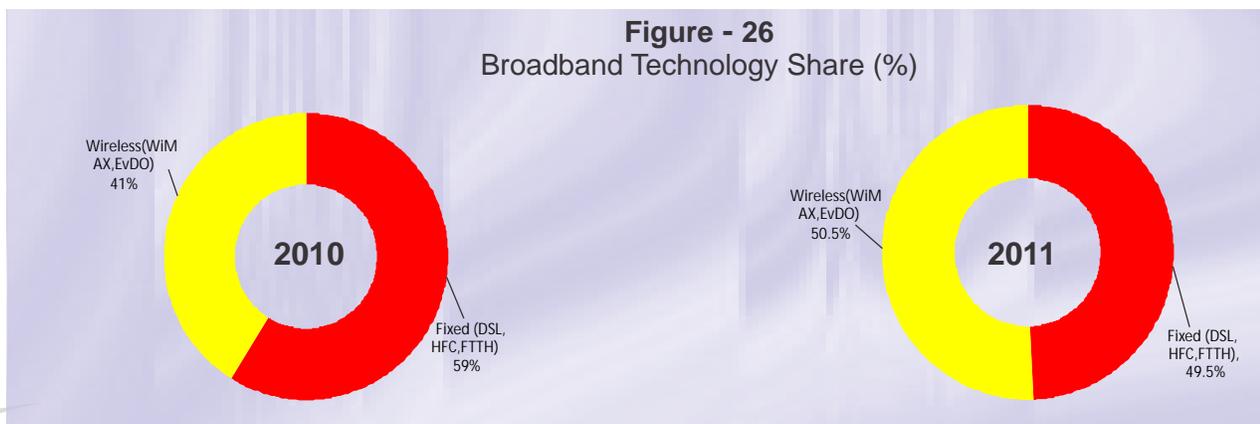
with 148,441 clients and 10% market share, showed subscriber growth of 53%. Wi-Tribe caught up fast with WorldCall as the former posted strong figures during FY 2011. Wi-Tribe's customer base grew by a striking 163% to touch 136,674 and market share of 9%. Starting its services last year, Qubee received encouraging response from the consumers as the company brought into fold 46,112 users, claiming 3.1% stake in the market. It was chased by Link Dot Net with 37,693 subscribers and 2.5% market share.

Broadband Technology Trends

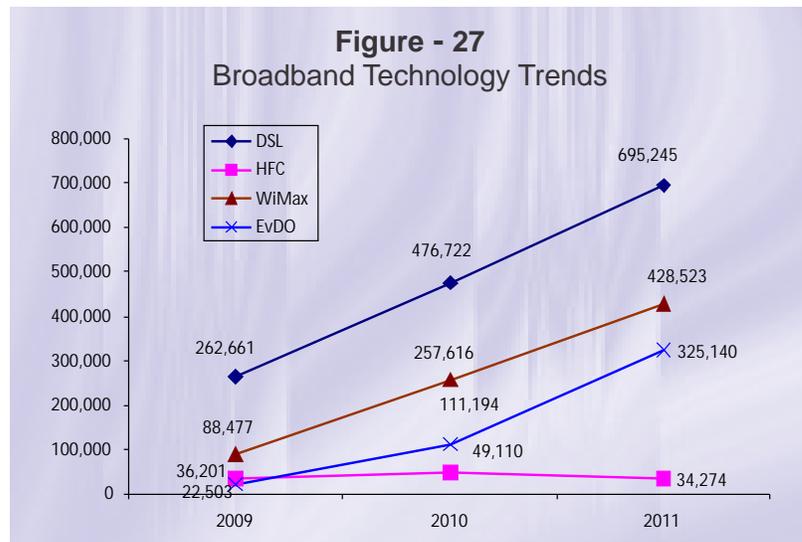
Pakistan has always been a frontrunner when it comes to adopting new technologies and presenting a wider choice of fixed and wireless technologies for the consumers to select from. Launching commercial WiMAX network by Wateen and VDSL2 bonding technology by PTCL is reflective of the international trend. Presently, Pakistan broadband market boasts of a blend of old and latest technologies ranging from HFC, FTTH, and DSL to WiMAX, EvDO and VDSL2. The wireless technologies have grasped a major share in broadband market as compared to fixed technologies (Figure- 25).



An analysis of the broadband technologies as portrayed in Figure-26 shows the comparative tendency of technology adoption in the country. DSL is the most used broadband technology in Pakistan. PTCL and Link Dot Net are the major DSL operators offering this service to their customers whose number reached 695,245 at the close of FY 2011. WiMAX services have won tremendous success since its inauguration in 2007 by Wateen. Later, Wi-Tribe and Qubee also commenced



WiMAX based networks, building a strong subscriber base of 428,523 by June 2011. EvDO has shown phenomenal progress with its inherent mobile facility and high speed. PTCL and WorldCall are providing EvDO services and together the two companies have registered 325,140 subscribers in the market in a short span of time. HFC is one of the oldest technologies mostly used by WorldCall.



Broadband Tariff

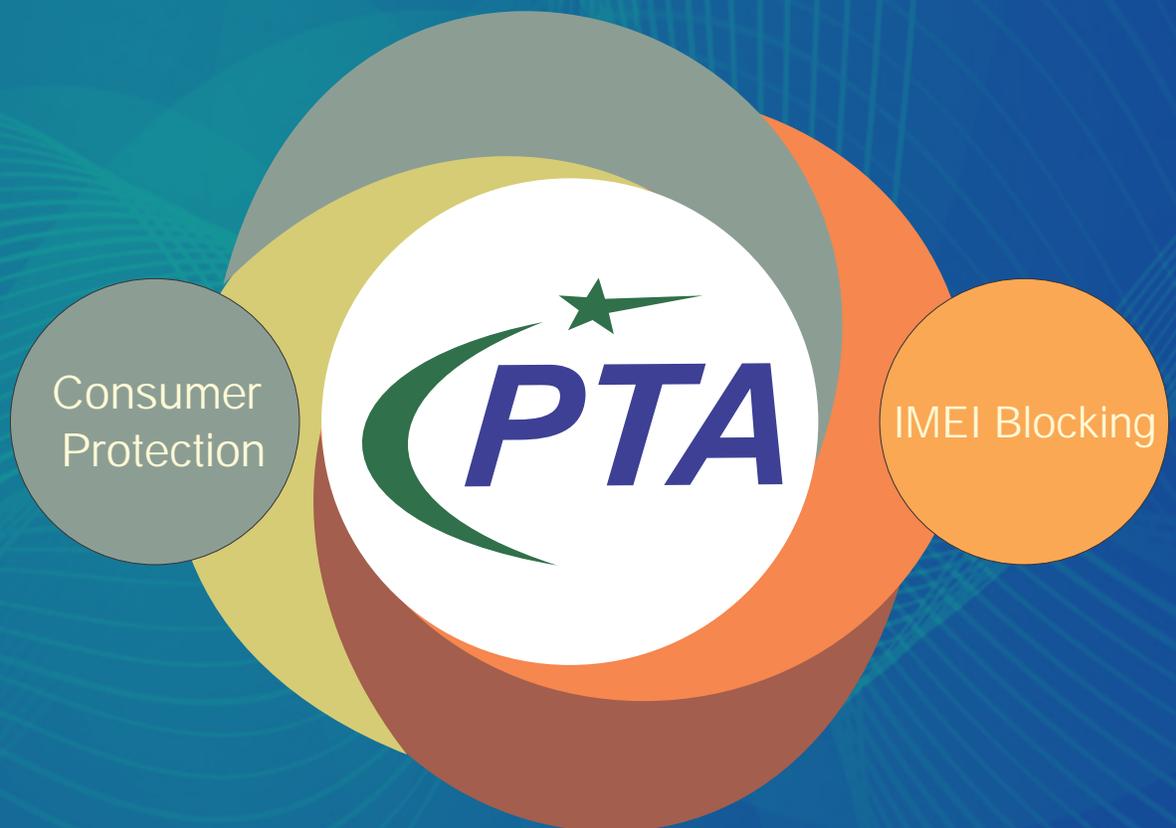
The success of any technology, product or service depends upon the cost of availing it. Be it cellular, broadcast or any other business, subscription levels are proportional to the cost of service. Like other communication technologies, broadband cost is bifurcated into two types of cost: Cost of entry (CPE, Installation, Security deposit etc) and Monthly Charges.

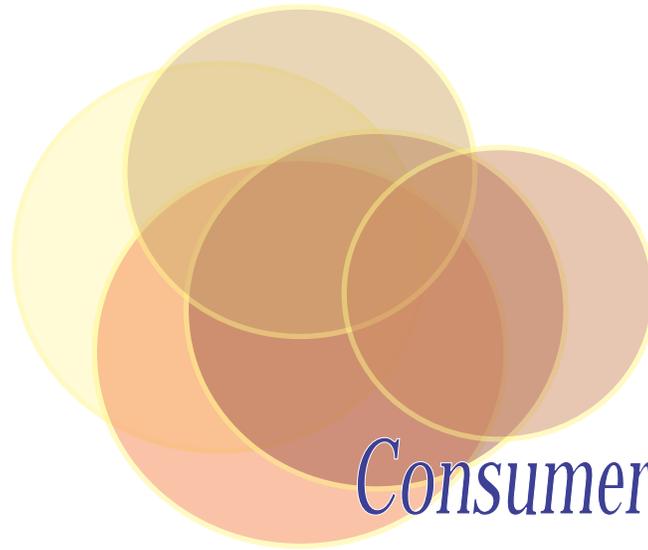
At the inception of broadband services, broadband costs were significantly high. Following arrival of new entrants and technologies in the market, tariff began to fall due to increasing competition. Currently, DSL operators are charging insignificant cost of entry along with attractive tariffs including PTCL's Student Package and Ramadan deals. Wireless operators have relatively higher CPE charges due to high cost of USB device. However, a large collection of operators, technologies and packages is available in the wireless market. Almost all broadband operators offer free downloads and special offers on religious and national occasions.

The effect of cost could also be examined by looking at the broadband uptake in USF subsidized areas. USF gives subsidy to telecom operators for providing broadband services in rural and underserved areas by awarding tenders. Broadband connections are being offered at a charge as low as Rs. 300 per month for residents of these areas.

Chapter -3

Consumer Protection





Consumer Protection

Consumer Protection

Pakistan Telecommunication (Re-Organization) Act 1996 entrusts PTA with the foremost responsibility of protecting interests of telecom consumers. Giving paramount importance to this obligation assigned by the Government, the Authority continuously reviews the best international practices to redress the grievances and safeguard the rights of customers. With these goals in sight, the Authority initiated a comprehensive consultation process with the telecom industry to identify benchmarks for non-discriminatory provision of services, fair commercial practices and effective redressal mechanism to attend to the consumer complaints by the company. The Authority has now in place a comprehensive Complaint Management System where subscribers can approach PTA for online resolution of their complaints. The consumers can also contact PTA through e-mail, telephone vide toll free number and conventional mail. A dedicated Directorate in the Authority looks after the consumer issues and suggests solutions through technical measures of problems including, for instance, fraudulent payment transfers and obnoxious calls.

Maintaining high quality of telecom services occupies the top slot in the mission statement of the Authority, so that consumers could benefit from uninterrupted, high quality communication services through out the country. PTA conducts several Quality of Service (QoS) surveys and consumer protection related activities all the year round and issues show cause notices or fines to operators who do not meet the standards as per the license.

Complaint Management System

The Authority is inspired by the belief that the central objective of a just regulatory regime should be protection of the consumers' rights. It, therefore, seeks to guard the rights and interests of the consumers through an effective regulatory framework, by solving their problems through telecom companies. With a subscriber base of over 112 million (Mobile and LL), this is indeed a colossal challenge for PTA and the telecom industry. PTA launched a comprehensive complaint management system in October 2010. Federal Minister for Information Technology & Telecom Sardar Aseff Ahmad Ali unveiled the new online Complaint Management System (CMS) developed by the Authority. The

system enables telecom consumers to lodge their complaints online pertaining to telecom services and receive prompt response. The CMS working at PTA is linked with operators system at their premises. The Federal Minister appreciated PTA's efforts, saying that the System was a significant step towards troubleshooting of the problems reported by the users of telecom services.

Online Complaint Managements System is accessible to the public through “Online Complaint Form” located at PTA's website. It is very convenient, efficient and user-friendly interface for conveying complaints and tracking their outcome. Complainants are kept informed through auto generated email notification to the email address provided by the users at the time of placing the complaints. The complainant is required to register the complaint with licensed telecom operator. In case the issue is not resolved by the licensee, the complainant can send the complaint through PTA toll free number, fax, email, post or through its website.

According to procedure of the Complaint Management System, the complaint is at first analyzed by Consumer Protection Directorate (CPD) at PTA. No immediate action is taken by CPD on the complaints addressed to the relevant operator and only a copy is made to CPD. This is done in order to give the operator opportunity to sort out the grievance. After the expiry of the timeline provided by the licensee to the complainant, the complainant, as per Sub Regulation (3) of Regulation 15 of the

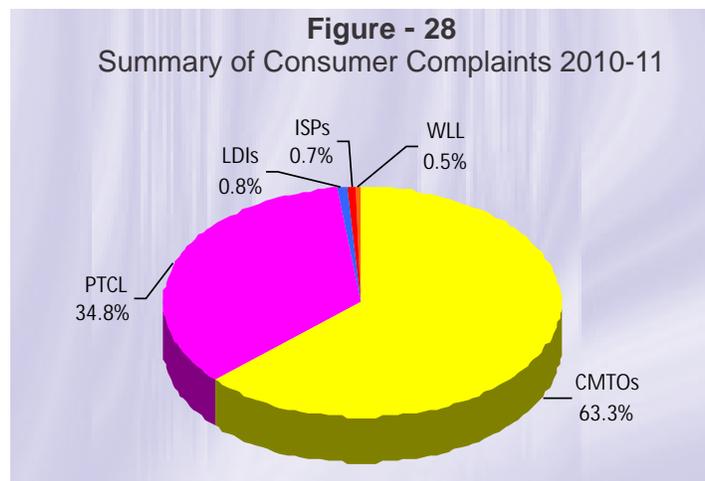


'Telecom Consumers' Protection Regulations 2009', provides his/her name, contact details, and Unique Number given by the respective licensee to CPD. On receiving the required information, complaint is pursued with the concerned operator within three days of the receipt and the process is notified to the complainant at each step. Depending on its nature, the complaint has to be resolved within fifteen working days. In case of deadlock and if required, personal hearing is arranged at the nearest location of CPD/PTA HQs or Zonal Offices keeping in view the convenience of the complainant.

Analysis of Consumer Complaints

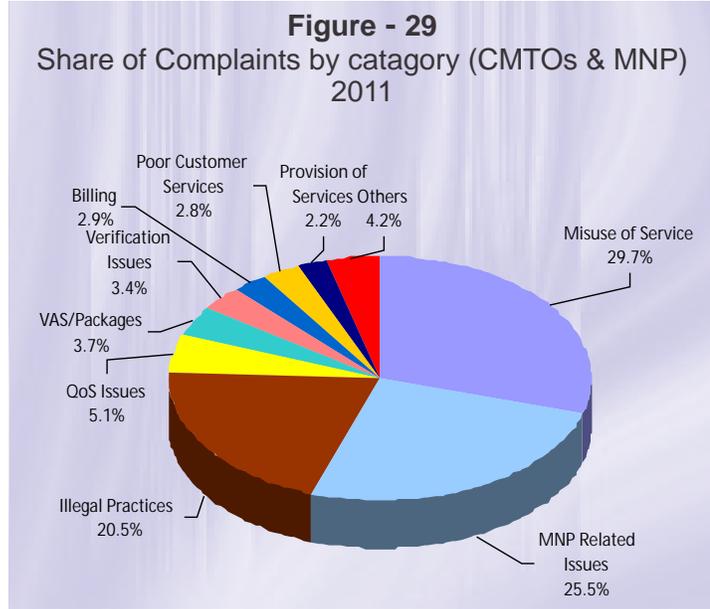
The Authority analyzes the nature and frequency of consumer complaints received through Complaint Management System on monthly, quarterly and yearly basis and finds out permanent solution of the complaints by resorting to technical or regulatory steps. On the basis of this analysis, the Authority identifies weak areas of service providers and devises a methodology to improve the situation. This activity is a regular feature of the Authority with a dedicated team at PTA working on it rigorously and continuously.

During the reported period, the Authority received 31,338 consumer complaints against mobile operators, PTCL, LDIs, WLL,



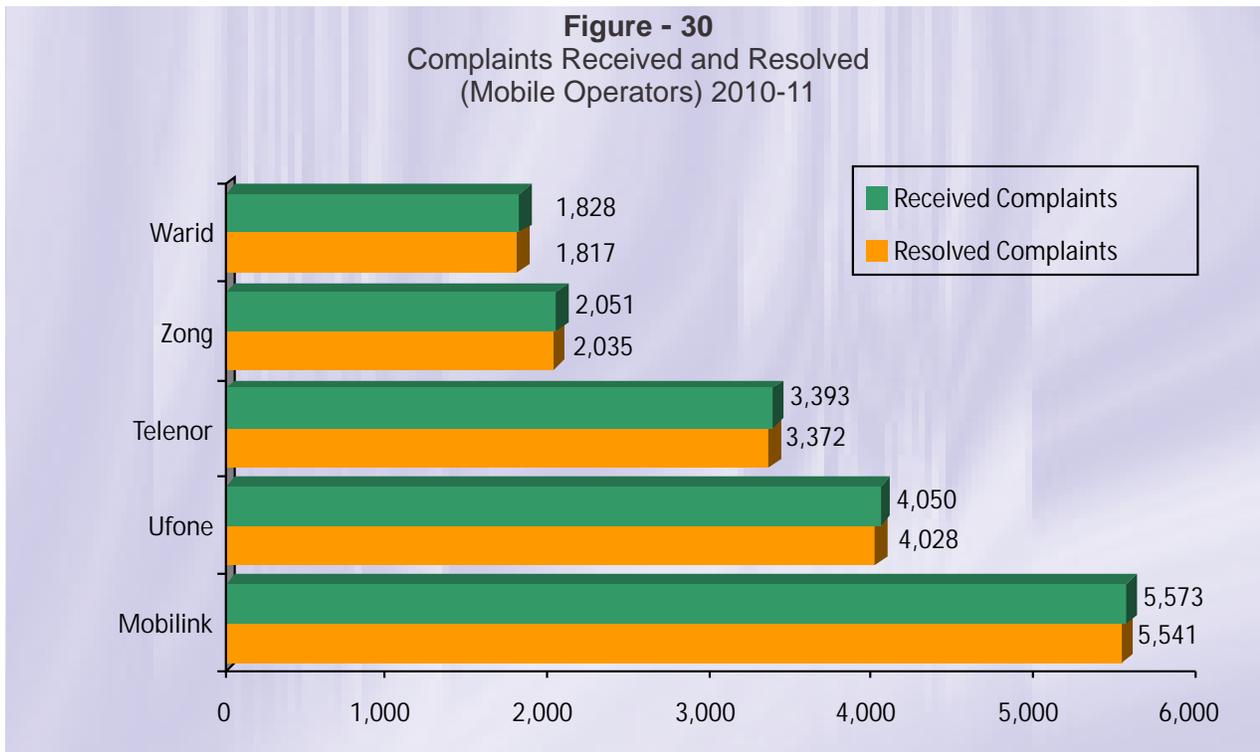
ISPs and MNP. Figure - 28 shows percentage of total complaints during the year against each service. Since mobile services have the largest number of subscribers, almost 63% of total complaints pertained to mobile services, followed by PTCL with 35% of total complaints.

Last year 19,839 complaints were received against mobile services and MNP out of which 30% of complaints were related to misuse of service followed by MNP (26%) while 20% were about illegal practices. The share of complaints in other areas including billing/verification issues etc. was insignificant.

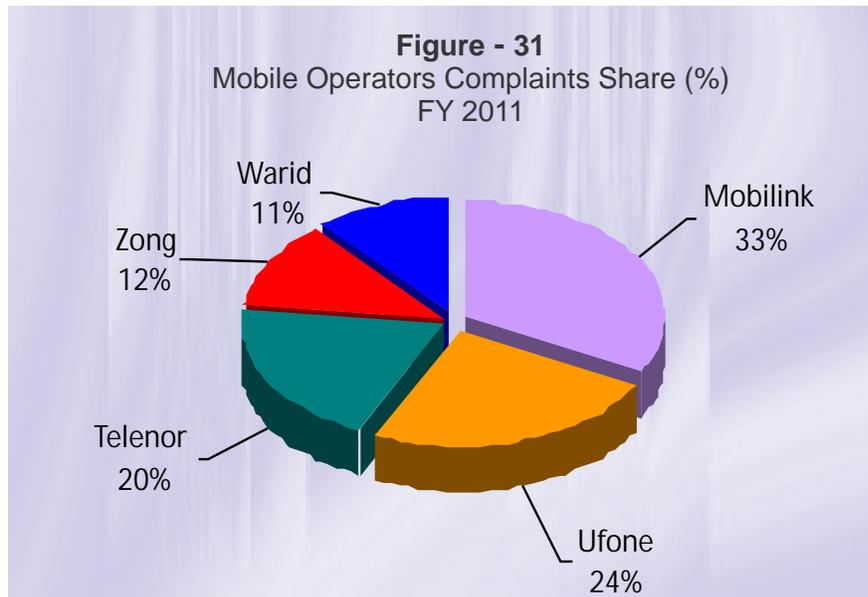


The complaints received by PTA during the year pertained to all five mobile operators, shown in the Figure-30, the maximum number (5,573) of complaints were against Mobilink, followed by Ufone, Telenor, Zong and Warid with 4,050, 3,393, 2,051 and 1,828 complaints, respectively. PTA has redressed 99% of total complainants received against mobile operators. According to the share of each operator in total complaints received by the Authority, Mobilink had the highest (33%) followed by Ufone 24%, Telenor 20%, CMPak 12% and Warid 11%.

Consumer Protection



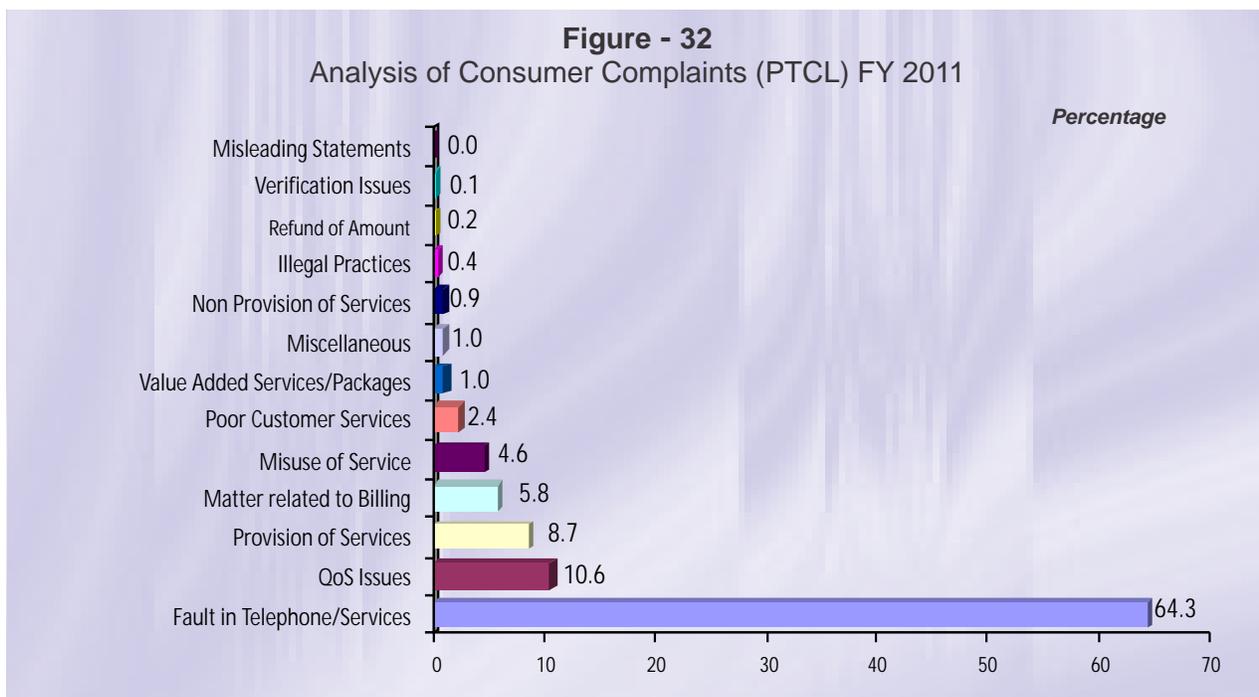
About 2,944 complaints were received against MNP related issues during FY 2011 and some were taken up with the CMOs and 100% redress rate was achieved. These complaints were related to change of network, post MNP issues, change of network after clearance of dues, 667 related issues, MNP barring/obligatory clauses and change of ownership of ported number. PTA took up the issue with CMOs & PMD and complaints related to “Controllable Rejections” decreased from 29% to 4%.



The Authority received 10,897 complaints against PTCL in around 13 broad categories. However, the main chunk of the complaints concerned faulty telephone/ service. Similarly, major complaints against PTCL were also related to provision and quality of service.

Table - 12
Status of Quarterly Consumer Complaints against MNP FY 2011

Quarter	Received Complaints	Resolved Complaints	Redressal (%)
QE September 2010	678	678	100%
QE December 2010	575	575	100%
QE March 2011	1,167	1,167	100%
QE June 2011	524	524	100%
Total	2,944	2,944	100%



Measures to Control SPAM

Major complaints by consumers in last few years were related to spamming, unsolicited tele-marketing, obnoxious and fraudulent communication. The Authority sought technical solutions of such complaints by issuing SPAM Regulations in 2009 under which detailed SOPs were established to frame modalities to control unwanted communications. The SOPs consist of blocking criteria and a fortnightly report submitted to the Authority of complete user antecedents (user information) involved in spam activity after suspension of its services.

PTA has allocated a common short code '9000' to all mobile operators with which a mobile user can send the SPAM messages with the request to stop such spam. After verification the operators take action against sender including the closure of the number. In addition to other requirements, 10 Paisa inclusive of tax is charged for each SMS sent on 9000 short code to prevent abuse of facility. This scheme has been operational since August 15, 2011. To be at par with the best international practices, PTA persuaded the operators to install Anti SPAM filters at their respective networks. On the basis of Online and offline CDR analysis reports received from all mobile operators, the Authority has so far suspended 25,824 connections on the request of consumers complaining against uncalled for and illegal telemarketing messages.

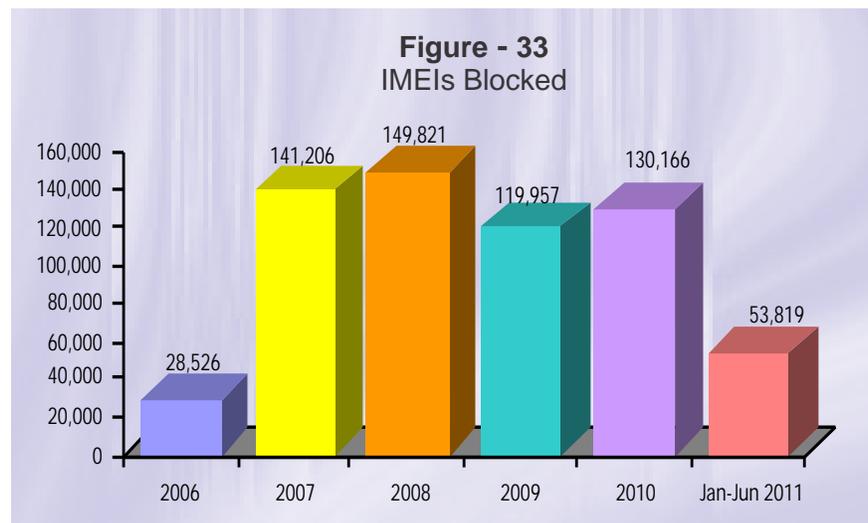
SMS Blocking Facility

As unwanted telemarketing and promotional calls/SMS perturb the mobile subscribers, the Authority devised a solution in collaboration with operators by allocating a common Short Code "3627" which provides a facility to cellular mobile subscribers to opt-in/opt-out of the Do Not Call Register (DNCR). The users can send unwanted number to the prescribed short code and the number is barred from calling to the complaining subscriber. The facility, which will be available to all the consumers in near future, is of immense utility to the customers in getting rid of unwanted calls and messages.

IMEI Blocking

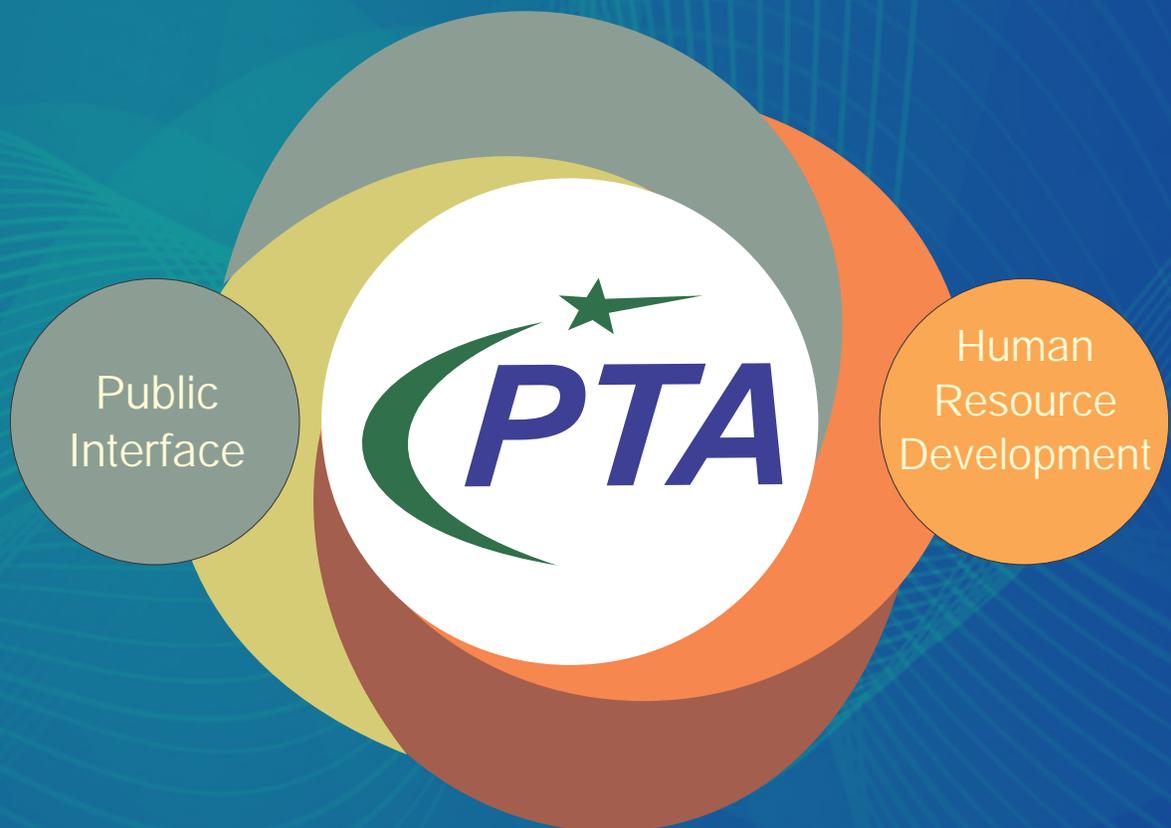
Blocking of International Mobile Equipment Identity (IMEI) is another successful initiative of the Authority for the community. This facility, opened by the Authority in 2006, is availed by the owners of mobile telephones for getting blocked the IMEI of their stolen, snatched or lost mobile phones. PTA also provides the facility to unblock the handset following SOPs in case the lost or stolen mobile handset is found or recovered.

Since the commencement of this facility, 623,495 IMEIs have been blocked. Out of these, 34,902 handsets have been unblocked following proper verifications of owners' claims.



Chapter -4

Building Bridges and Capacities





Building Bridges and Capacities

PTA as a regulator of telecom industry maintains high level of public interaction in order to keep itself abreast of on-ground issues of telecom services with a view to making improvements as well as initiating new services. The Authority regularly collaborates with the telecom industry to hold seminars, workshops and consumer forums during the year to explore existing and future avenues of growth. The best possible solutions for capacity building of human resource are sought by the Authority to upgrade its performance according to the changing regulatory needs. PTA, therefore, organizes and participates in local and foreign trainings, workshops, and career counseling.

Public Interface - Seminars, Forums and Workshops

Through various forums organized in collaboration with the local industry, PTA seeks feedback from experts and academics for elevating its performance to higher standards. The Authority also holds forums for creating awareness among consumers about new technologies, and listening to their point of view on regulatory issues. During the year under review, PTA put together several seminars sponsored by telecom operators/vendors.

Seminar on 3G

Pakistan Telecommunication Authority organized in Lahore a seminar in collaboration with ZTE Corporation (Zhongxing Telecom) on 3G mobile services. The event was entitled “To be or not to be is not the question: 3G is coming”. Federal Minister for Information Technology and Telecom, Sardar Aseff Ahmed Ali attended the seminar as the chief guest while Chairman PTA, Dr. Mohammed Yaseen, presided over the ceremony. Chief Executive Officer ZTE Pakistan Mr. Peng Aiguang, IT & telecom industry experts, CEOs of telecom companies, academia and media representatives participated in the seminar.

On the occasion, the Minister stated that “The introduction of 3G networks, devices and services in countries around the world is enhancing quality of life and providing expanded economic opportunities, both in the public and private sectors”. Chairman PTA briefed the participants on the prospects of 3G in Pakistan. Mr. Cao Long Wang Li Heng, Mr. Rahel Kamal, representative of Qualcomm

made presentations highlighting impact of 3G services. During the event, all five cellular mobile operators signed MoUs to boost localized applications, content and services.



Seminar on 3G Devices in Islamabad

The Authority organized a seminar at Islamabad jointly with Qualcomm Incorporated, USA on 3G mobile services on 11 January, 2011 under the theme of “Manufacturing 3G Devices in Pakistan Opportunities for All”. The seminar was attended by representatives from Board of Investment, Pakistan Engineering Council, Ministry of IT, Qualcomm, IT & telecom Industry, experts, CEOs of telecom companies, international Original Equipment Manufacturers (OEMs), local investors, mobile distributors, academics and media representatives. On the occasion, Chairman PTA apprised the audience about excellent investment opportunities offered by Pakistan in 3G handset manufacturing with availability of skilled manpower and upward growth of mobile market. In their presentations, Mr. Raheel Kamal, Mr. Sanjeet Pandit and Mr. Hani Yassin of Qualcom underscored the magnitude and importance of 3G manufacturing in Pakistan.

Connect ICT Forum 2011

Connect ICT Forum 2011 was convened on the occasion of the 6th edition of Information & Communication Technology Exhibition-Connect 2011 at Expo Centre Karachi. The Forum which was heavily attended by IT & telecom industry experts and academia offered an interactive platform with top level networking. On the occasion, Country Head, Pakistan & South Asia, Communications Oracle Corporation Singapore Mr. Asif Ijaz, Country Director Pre-sales Pakistan, Afghanistan & Iran Alcatel- Lucent Pakistan Ltd Mr. Fouz Sattar, CEO TEXPO UAE and Pakistan Dr. Sarfraz Alam and CEO Augere Pakistan Mr. Mobashar Naqvi were present. Addressing the forum, Chairman PTA, Dr. Muhammad Yasin said that accelerating pace of



technological advancement in ICT was increasingly becoming ubiquitous and intrinsic part of peoples' behaviour and social networks as well as of business practices, government activities and service provision. He was of the view that transformations 2.0 was expected to take human progress forward by further leveraging positive impact of ICT in social, political, and economic domains on governments, enterprise, and civil society.

Local Language Content on Internet

Pakistan Network Information Centre (PKNIC) organized in Lahore a conference in collaboration with online Urdu literature website U4U.COM on "Local Language Content Stimulus". Chairman PTA presided over the conference and appreciated the efforts of PKNIC for providing the stakeholders occasion to discuss the potential of local language content on computer and mobiles in the future of digital society in the country, underscoring its huge potential in the fields of education, health, governance and banking. The Chairman also emphasized the need to develop local language social networking platforms, search engines and entertainment platforms on the basis of popular internet usage trends in Pakistan, adding that future technological platforms will be needed only if future content and services were available to the people.

PTA and PKNIC have also announced a joint initiative to launch local internet content drive in the country. Under the programme, PKNIC will offer 5,000 free domains for prospective developers of Local Content websites in Urdu or any other local language. PKNIC is the (ccTLD) operator for ".pk domain" which represents a country on the internet.

SOS Children Village

As a philanthropic gesture, Pakistan Telecommunication Authority joined hands with Alcatel Lucent (ALU) Pakistan to donate laptops to the children of SOS Village, a private social welfare organization providing home to orphans and abandoned children. The donation ceremony was held at SOS Village, Bahria Town Islamabad. Chairman PTA Dr. Mohammad Yaseen and CEO ALU, Mr. Aadil Rauf attended the ceremony.



Chairman PTA urged the private sector to ensure that corporate social responsibility must be a priority, especially in Pakistan's perspective where social and financial disparities are high. He appreciated the work of SOS Staff who groomed disadvantaged children for the future of the country and eulogised the activities of SOS worldwide. The Chairman thanked ALU for their support to the SOS Village.

Cellular Village Connection Trial (CVCT)

In order to provide GSM services to the uncovered areas, PTA has been striving for cost-effective expansion of existing GSM network coverage. As the roll-out in these areas is expensive and commercially unviable, operators are reluctant to cover these regions. The Authority invited all operators to initiate GSM coverage in Neelum Valley on trial basis. Resultantly, other operators have shown their intention to launch the projects. The project has been awarded to SCO. The security concerns of telecom activity as highlighted by the GHQ in areas close to LoC have been forwarded to SCO for compliance. The Authority has issued letter to kick-start the trials in Neelum Valley which are expected to be completed in six months. PTA will monitor the progress of the project.

Launch of National Rabta Information Portal

Pakistan Telecommunication Authority launched National Rabta Information Portal (www.pakistan.pk), a single source facilitation web portal to provide information and content repository to information seekers from within and outside the country. The web portal has currently over 1000 web links, 84 downloadable forms of various categories, links to educational institutions, hospitals, print and electronic media, federal, provincial and private sector institutions. State Minister for Information & Broadcasting Syed Sumsam Ali Shah Bukhari inaugurated the 'National Rabta Information Portal' at PTA Headquarters, Islamabad. Appreciating effort of the Authority, the Minister reiterated Government's strong conviction to take the country into an era of electronic service delivery (e-Services) by simplifying procedures, and making available credible and timely information to all the citizens.

Federal Minister Visit PTA

During a visit of the Federal Minister for Information Technology & Telecom (IT&T) Dr. Zaheeruddin Babar Awan to PTA Headquarters, Chairman PTA briefed the Minister on developments in telecom sector. Secretary Ministry of Law, Mr. Muhammad Masood Chishti, Member Technical, Dr. Khawar Siddique Khokhar and senior officers of the Authority were also present during the visit. On the occasion, the Minister directed to review telecom policies on annual basis. He stressed the need to make the complaint handling system more effective, advising service providers to address grievances of the consumers on priority basis. He also proposed to launch awareness campaigns in Urdu and regional languages. The Minister assured to soon establish Telecom Tribunals for expeditious disposal of telecom related cases. The Federal Minister offered his support to the Authority for unhindered access of telecom services to the people of Pakistan living in remote areas.

Human Resource Development

Development of human resource is another priority area for the Authority as it believes that capacity building is central to sustainable development. The officers of PTA are constantly groomed in multiple modules of Policy and Regulation. Every year, the officers participate in training programmes, meetings, workshops and discussion forums within country and abroad to learn from best practices and share knowledge to bring ICT innovation into the country. The organization follows a roadmap to achieve its targets through upgrading the capacity of its employees.

Foreign and Local Training

In order to hone the professional skills and enhance technical know how, the Authority works to capitalize on the international capacity building opportunities for its team members. In accordance with the laid down criteria, PTA employees are regularly trained for advancing their competence to a level where they are of value and benefit for the organization. The staff of the Authority participated in several such events organized by ITU, APT, GSMA, SAFIR, LIRNEAsia, SAMENA ITU/ACMA MOFCOM, ITU/TEMIC and USTTI. Keeping in view the austerity drive of the Government, the training programmes of PTA's manpower were financially sponsored by international organizations. During the year under report, as many as 25 PTA officers took part in foreign training programmes, workshops, and meetings. Besides, the employees were also selected for distance learning (online training courses) under ITU CoE Network. The Chairman and Member (Technical) represented Pakistan in high level international forums to exchange views on the latest technological and regulatory information with the heads of regulatory authorities, government officials, industry leaders and heads of world level operators.

On the invitation of the Chinese government, the Chairman of the Authority participated in Shanghai Expo 2010 from 12-14 August 2010. The Expo was a mega commercial event in which 70 million people from around the world visited this flagship event. The occasion boasted a spectacular display of the latest technology in cellular mobile industry, forums and discussions of senior policy makers, regulators, government functionaries and industry leaders on new technology and investment opportunities. The Chairman also participated in the super event of ITU Plenipotentiary Conference held in Guadalajara, Mexico from 04 to 22 October 2010. The Chairman met with various delegations to get support for the ITU election and promote investment opportunities in Pakistan. Chairman PTA also attended GSM Mobile World Congress 2011 convened in Barcelona from 14-17 February 2011. The Congress was the biggest and most prestigious annual event of the global mobile regulators and industry which drew over 49,000 telecom executives this year. The Chairman availed the occasion to hold meetings with representative and high dignitaries on variety of subjects including new mobile health care system, allocation of spectrum, transformation of multiple industry and investment opportunities. Invited by Global Investment Summits Ltd, Chairman PTA also attended Afghanistan Reconstruction Summit (ARS) to deliberate on essential constructions, development and investment initiatives in the region by promoting Pakistan and Afghanistan as viable and lucrative business and investment destinations.

Dr. Khawar Siddique Khokhar , Member (Technical) represented PTA in the 12th SATRC Meeting held in , Tehran, Islamic Republic of Iran from 27th February to 1st March, 2011. Regulatory heads of SATRC

members gave their statements in the meeting. They discussed key policy issues, did progress review on SATRC Action Plan III and set way forward for telecommunications in South Asia. SATRC was formed in 1997 by an initiative of APT and ITU Regulatory Forum for South Asia. The SATRC provides a platform to the highest level representatives of Regulators for discussion and coordination of all the issues relating to regulations in telecommunication and ICT in South Asia.

ITU organized a training workshop on “IPv6 Migration Strategy for Telecom Service Providers” under the framework of ITU Asia Pacific Centres of Excellence (ITU ASP CoE) followed by 5th Meeting of the ITU ASP CoE Management Committee. Dr. Khawar Siddique Khokhar, Member (Technical), represented PTA in the training and meeting held in Bangkok, Thailand from 25th to 29th July, 2011. The workshop was intended for regulators, policy makers, telecom service providers, technical experts and researchers to build skill on developing a migration strategy from a telecommunication service provider perspective. The agenda of 5th Meeting of the ITU ASP CoE Management Committee included key strategic decisions regarding action plan for 2011/2012, strategic direction of ITU ASP CoE, induction of additional nodes, constitution of management committee and time table of annual activities for 2011/12. ITU's Centre of Excellence- Pakistan node at PTA was discussed at length and issues related to node were highlighted in the meeting by Dr. Khawar Siddique Khokhar.

In an environment characterised by growing needs of capacity building in corporate cultures, PTA has been training its officers through reputed local institutes including LUMS, NUST, IBA and PIM. These institutions have been imparting trainings in a variety of areas to instil professional excellence and the latest knowledge in the field. In addition to these, in-house trainings are conducted at regular intervals to sharpen professional skills in areas of communication, information technology and management. This has led to better performance and speedy disposal of assignments during past couple of years. 75 officers and 124 staff members have been trained in various technical and managerial skills in well-known institutes in Pakistan.

ITU Centre of Excellence (CoE) Network PTA Node

The ITU has established Centres of Excellence (CoE) on regional basis in many countries to assist developing countries in capacity building. These centres have been set up in countries having special expertise on key regulatory issues so that their experience can be shared with other member states for their technological development in telecom sector.

ITU established a Centre of Excellence in Pakistan in 2006 keeping in view the successful liberalization and deregulation of telecom sector in the country. The mandate of this Centre is to conduct training courses on “Telecom Policy and Regulation” for countries in the Asia Pacific region. ITU Centre of Excellence (CoE) Network PTA Node, managed the following activities during 2010-11:

- ✘ *Online course on “Interconnection and cost Modeling” 21 Jan to 4 March 2011*
- ✘ *Workshop on Migrating to converged Licensing 5-8 April, 2011*
- ✘ *Online course on “Interconnection and cost Modeling” 21 Jan to 4 March 2011*
- ✘ *Workshop on IPV6 Strategy for Telecom Service Providers*
- ✘ *Workshop on “Broadband Policy and Regulation Emerging Practice and Lessons” held in Bangkok 2-6 August 2011*

Chapter - 5

Vision 2020

..... The Road Ahead





Vision 2020

.... The Road Ahead

Pakistan Telecommunication Authority has been following a futuristic agenda with a view to keeping itself ahead of time to keep pace with the fast changing world of telecommunications. The professionals at the Authority are supposed to plan ahead by understanding the trends and forces which are shaping the future market. Therefore, PTA remains focused on tailoring a 'Roadmap' to actualize a win-together philosophy in concert with market players and relevant stakeholders.

'Vision 2020' document is such an endeavour by the Authority which lets telecom policy makers, regulator(s) and analysts have a glance into prospective developments in the fast growing sector and possible impediments on the way over the next 10 years. An overview of telecommunications in Pakistan in the year 2020 has been presented in the following paragraphs.

According to the study forecast, the role of telecom sector in economy will not remain confined to that of mere support but will snowball into a major driving force behind economic growth. Given the state of economy, population growth and other socio-economic indicators, the document predicts the Foreign Direct Investment (FDI) to continue to pour into the sector, particularly after the launch of 3G services in Pakistan. Telecom sector revenues would overrun the mark of Rs. 620 billion by 2020. In the wake of growing trend of mobile services, it can be foretold that fixed line customers would more or less maintain the 5 million average till 2020, while the broadband users are expected to be 19.5 million. The number of mobile subscribers is likely to multiply to reach 161 million, approximately 89% of the total population by twenty twenty.

Table - 13
Subscriber's Forecast

(Million)

	2010	2015	2020
Mobile	100	122	161
Local Loop	3.42	3.96	5.36
Broadband	1.1	12.0	19.5

The Business Models in Vogue

Most of the business models for telecom sector still count on subscriber line rentals and usage charges for revenues. However, new revenue streams are increasingly appearing in the form of either access (usually to a web-based service) or carriage charges (usually paid by a content provider) or revenue-

sharing with the providers of content and application services. The new modes of generating revenues are expected to come into play, especially for fixed line telecommunication market. Moreover, with the emergence of all-IP Next Generation Networks (NGNs), Internet Protocol Virtual Private Networks (IPVPN) will integrate voice and non-voice communications for enterprises. Most profitable business yet for fixed line operators is the enterprise data market as voice traffic remains a cash cow and continuing source of liquidity which promotes the efficacy aspect of the larger telecom companies.

Stepping into e-Pakistan

e-Pakistan is a unique concept that the Authority envisions for the next ten years to employ substantial telecommunication infrastructure in terms of fixed and wireless for resolving country's challenges relating to education and health. The well-built communication highways could be utilized to reach out to larger segments of the people having no access to basic health and education services. The concept also focuses on knowledge sharing in different domains of ICT for development besides facilitating multi-stakeholder partnerships and networking among governments, industry, academia and civil society organizations in the country. A mammoth tide of local content and applications will be provided through this infrastructure to take the people of Pakistan beyond basic voice and data services.

Switching over to Broadband 2.0

The document is of the view that Broadband 2.0 networks will eventually replace current broadband networks. While old and new networks may exist simultaneously for a short period of time, there would possibly be strong business reasons to shift to a single and modern network in the longer term. For owners of the existing networks, effective transition is likely to be one of the keys to long term success in making financial return on investments. The transformation to new networks affords the operators a chance to increase efficiency and reduce operating costs over a period of time. Hit by the current global economic recession, there are substantial pressures to encourage excessive use of digital technologies to lower the cost of providing core public services and improving national economic competitiveness. Broadband is a critical tool to achieve these goals. The next ten years would bring in ubiquitous personalized communication lifestyle where any service would be run on any device, network or location through a broadband connection.

3G & Beyond Inspiring New Economy

Mobile cellular technology is primarily focused on the consumer market, acting as a substitute for often unavailable wired telephony. Vision of 4G and beyond, including established technologies like WiMAX, are heralding the age of convergence. The most prominent example of convergence is the facility of watching television on telecom networks. In the wired world, this means IPTV and Web-TV, while in the world of wireless, it suggests mobile TV. Additionally, wire line and wireless networks are converging as multimedia services are being delivered across all-IP broadband. Mobile phones are now capable of running sophisticated applications through 3G platforms. In the IP world, consumers are increasingly participating in the creation of content, applications and services by blending available resources and creating value for all contributors. 3G mobile networks

will usher in proliferation of applications, thus generating a deluge of data traffic. This will without doubt facilitate local content distribution and media mobility services, increasing demand for localized content. Mobile payments would stand as the most demanding service. PTA's recent effort to formulate mobile banking regulations in collaboration with the State Bank of Pakistan is inspired by the vision to streamline regulatory framework for mobile payments. Agriculture - a primary sector in the national economy - also offers immense potential for mobile agriculture services to farmers and food production companies.

Spectrum Refarming ... Balancing Demand & Supply

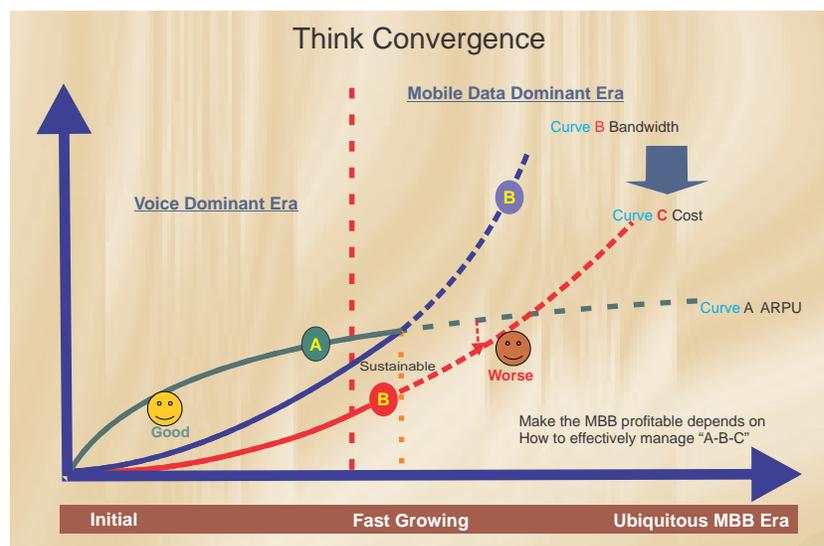
Frequency harmonization is crucial to making headway in wireless technologies, particularly in the context of mobile broadband development in rural areas. Efficient use of wireless spectrum, therefore, entails spectrum refarming, reassignment of frequencies from low-value services (public and/or cost benefit basis) to high-value. This is not an easy task as the occupants of the respective frequencies are likely to be wary of receiving reassigned frequencies owing to the fear of disruptions in their operations. These difficulties notwithstanding, PTA intends to push ahead in this imperative job in order to develop a comprehensive regulatory framework on the subject.

A Converged Future

With the advent of New Generation Networks, Internet Multimedia Service (IMS) platforms and Internet Protocol applications, the boundaries between transmission of Data, Voice and Image have vanished due to IP Data, VoIP and IPTV. Telecoms in 2020 will be simpler with fewer service providers, a converged regulator with a wide scale jurisdiction encompassing internet, spectrum assignment & allocation, broadcasting, international communication, and computers.

The year 2020 will witness Pakistan as a country with 100% NGN infrastructure - the country's internet backbone for local and international content utilization. The division between voice and data, circuit switch or packet or cellular and fixed-line, telecom or broadcasting would be things of past as operators will be dishing out a wide range of services on a converged infrastructure platform.

In a technology and services-converged environment, global operators have adopted convergence in their networks in view of the economies of scale, bundled services, better infrastructure planning, and a one stop-shop scenario. Following suit, policy makers and regulators have started embracing converged regulatory regime to facilitate investors and the public. A proposal in this regard has been made to the Government of Pakistan for considering unified regulatory regime.



The Way Forward

In the backdrop of technological developments and future trends, concerted efforts from all quarters ranging from policy-makers, regulator, service providers and other stakeholders will have to be exerted. Much will of course also depend on improvement in the socio-economic conditions in the country. The policymakers will have to look into the downward revision of the Telecom Sector taxation for a positive impact on future investment. The service providers would be required to focus on service quality and the need to create awareness besides working on attractive tariffs. Similarly, the regulator will be required to act as a facilitator of mergers and acquisitions in order to ease the fierce competition and level the turf of predatory pricing. The regulator will also be concentrating on the need for additional requirement of spectrum in the wake of increased demand of Broadband, WiMAX and other wireless technologies. The availability of all services for the subscribers through a single platform would, indeed, give a tremendous boost to the national economy, giving it sufficient strength to mitigate impact of natural calamities and other challenges.

Annexes



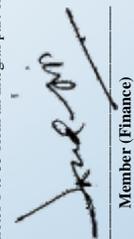
Pakistan Telecommunication Authority

Balance Sheet

As at June 30, 2011

	Note	June 30, 2011 Rupees	June 30, 2010 Rupees Restated	June 30, 2009 Rupees Restated	June 30, 2011 Rupees	June 30, 2010 Rupees Restated	June 2009 Rupees Restated
Federal Consolidated Fund (FCF):							
Total due to Government of Pakistan (FCF)		47,273,234,021	51,702,523,678	42,098,739,925	543,676,325	592,674,931	584,140,807
Payments made to Government of Pakistan (FCF) - to date		(43,451,058,869)	(41,251,058,869)	(41,251,058,869)	1,861,457	2,930,492	3,402,516
Due to Government of Pakistan - FCF	4	3,822,175,152	10,451,464,809	847,681,056	53,413,992,174	61,227,548,750	68,214,980,000
Long term loan	5	-	57,614,450	57,584,222	1,861,457	2,930,492	3,402,516
Total payable to AJK & GB					53,413,992,174	61,227,548,750	68,214,980,000
Less: Transferred to current portion - to date							
Amount transferred to current portion							
Payments made to Governments of AJK & GB - to date							
Net Amount transferred to current liabilities							
Long term payable to AJK & GB	6	1,051,808,631	1,290,592,388	1,370,031,573	946,550,000	1,155,600,000	1,300,750,000
Deferred grant	7	146,497,153	180,117,851	225,454,375	49,623,906	50,740,188	36,641,121
Deferred liabilities	8	196,721,217	151,453,993	114,350,960	1,089,761,499	7,865,386,560	4,278,097,300
Current liabilities							
Unearned revenue							
Payable to AJK and GB - net	9	2,172,151,250	277,101,250	-	25,212,582,335	14,746,104,288	10,839,392,295
Taxation - net	10	302,902,966	42,639,970	663,224,434	(19,460,682,904)	(9,087,659,408)	(8,135,797,775)
Accrued and other liabilities	11	6,571,098,955	6,100,965,541	11,589,285,381	5,751,899,431	5,658,444,880	2,703,594,520
		54,703,642	49,233,377	15,838,454	(11,897,305,558)	(11,897,305,558)	(7,197,305,558)
		9,100,856,813	6,469,940,138	12,268,348,269	6,145,406,127	6,238,860,678	4,493,711,038
Net recoverable from Public Account against USF, R&D and APC for USF					20,000,000	-	-
Investments	22				194,617,904	54,158,060	85,213,887
Advances, deposits, prepayments and other receivables	23				4,700,000,000	-	-
Tax refundable	24				626,561,748	2,620,832,720	4,081,493,786
Cash and bank balances	25				12,776,347,278	16,779,238,018	12,938,516,011
		14,318,058,966	18,601,183,629	14,883,450,455	14,318,058,966	18,601,183,629	14,883,450,455
Contingencies and commitments							

The annexed notes 1 to 35 form an integral part of these financial statements.



Member (Finance)



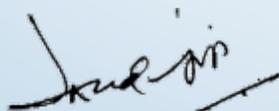
Chairman



Pakistan Telecommunication Authority
Income and Expenditure Account
For the year ended June 30, 2011

	<i>Note</i>	June 30, 2011 Rupees	June 30, 2010 Rupees Re-stated
Revenue	26	10,607,876,279	12,046,284,376
Expenditure			
General and administrative expenses	27	612,776,507	533,881,706
Provision for doubtful receivable	28	5,622,759,869	-
Audit fee		300,000	300,000
Financial charges		108,950	4,022,786
		(6,235,945,326)	(538,204,492)
Amortization of deferred grant	7.2	33,620,698	28,343,913
Operating surplus		4,405,551,651	11,536,423,797
Other income	29	412,296,785	1,064,878,722
Surplus for the year before taxation		4,817,848,436	12,601,302,519
Less: Provision for taxation			
- Current year	10 & 33	(3,822,098,329)	(3,898,358,857)
- Prior		(5,133,945,733)	1,447,917,438
		(8,956,044,062)	(2,450,441,419)
Net (deficit) / surplus for the year transferred to Federal Consolidated Fund		(4,138,195,626)	10,150,861,100

The annexed notes 1 to 35 form an integral part of these financial statements.


Member (Finance)

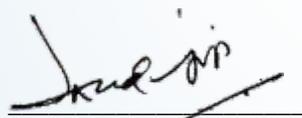

Chairman

Pakistan Telecommunication Authority
Statement of Comprehensive Income

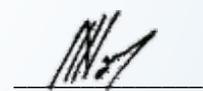
For the year ended June 30, 2011

	June 30, 2011	June 30, 2010
	Rupees	Rupees Re-stated
Net (deficit) / surplus for the year	(4,138,195,626)	8,883,468,951
Other comprehensive income	-	-
Total comprehensive income for the year - (loss)	<u>(4,138,195,626)</u>	<u>8,883,468,951</u>

The annexed notes 1 to 35 form an integral part of these financial statements.



 Member (Finance)



 Chairman

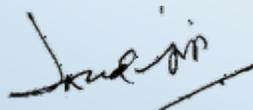
Pakistan Telecommunication Authority

Cash Flow Statement

For the year ended June 30, 2011

	Note	June 30, 2011 Rupees	June 30, 2010 Rupees Restated
Surplus for the year before tax		4,817,848,436	12,601,302,519
Adjustments for non-cash items:			
Depreciation on property and equipment	13.1	56,202,957	69,504,814
Amortization on intangibles	14	1,069,035	1,059,924
Provision for gratuity	8.3	28,161,994	23,807,566
Provision for pension		1,831,934	459,822
Interest income for the year		(302,503,379)	(29,782,780)
Provision for doubtful debts	28	5,622,759,869	-
Amortization of deferred grant	7.2	(33,620,698)	(28,343,913)
Assets written off / gain on sale of property and equipment		5,558	(7,250)
Loss on foreign currency translation		105,821	3,005,148
Operating surplus before working capital changes		10,191,861,527	12,641,005,850
Changes in assets and liabilities			
<i>(Increase) / decrease in assets</i>			
Advances, deposits, prepayments and other receivable		(1,110,960)	(21,146,705)
Accrued and other liabilities		5,470,265	33,394,922
Fees receivable including initial license fee - net		3,256,965,192	(3,153,307,813)
<i>Increases / (decrease) in liabilities</i>			
Public Account against USF, R&D and APC for USF		1,494,713,149	(1,256,494,535)
Payable to Government of AJK & GB		146,903,102	(458,033,148)
Due to Government of Pakistan		(2,491,094,031)	(558,807,544)
Contributory provident fund payable		19,657,769	17,093,254
		2,431,504,486	(5,397,301,569)
Cash generated from operations		12,623,366,013	7,243,704,281
Income taxes paid		(14,712,593,109)	(8,669,406,865)
Interest received during the year		164,270,777	67,886,246
Gratuity and pension paid		(4,384,473)	(4,257,609)
Net cash used in operating activities		(1,929,340,792)	(1,362,073,947)
CASH FLOWS FROM INVESTING ACTIVITIES			
Purchases of property and equipment		(7,209,909)	(80,591,789)
Purchases of intangibles		-	(587,900)
Proceeds from sale of property and equipment		-	2,560,101
Net cash used in investing activities		(7,209,909)	(78,619,588)
CASH FLOWS FROM FINANCING ACTIVITIES			
Long term loan repaid		(57,720,271)	(2,974,920)
Deferred grant adjusted / received - net		-	(16,992,611)
Cash used in financing activities		(57,720,271)	(19,967,531)
Net decrease in cash and cash equivalents		(1,994,270,972)	(1,460,661,066)
Cash and cash equivalents at beginning of the year		2,620,832,720	4,081,493,786
Cash and cash equivalents at end of the year	25	626,561,748	2,620,832,720

The annexed notes 1 to 35 form an integral part of these financial statements.



Member (Finance)



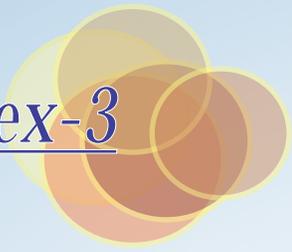
Chairman



Telecom Revenues

(Rs. Million)

Services	2007-08	2008-09	2009-10	2010-11
Cellular	182,122.2	212,423	236,047	262,761
Local Loop	63,693.1	62,568	61,595	58,320
LDI	23,396.8	47,969	32,895	29,954
WLL	2,704.0	2,670	2,880	4,849
VAS (Estimated)	8,048	8,179	10,202	7,052
Total	279,963.9	333,809	344,212	362,935
<i>Revenue 2009-10 are revised</i>				



Annex-3

Foreign Direct Investment

(US\$ Million)

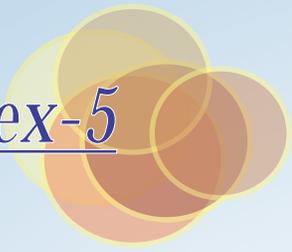
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
FDI in Telecom	1,905.1	1,824.2	1,438.6	815.0	373.62	79.2
Total FDI	3,521.0	5,139.6	5,410.0	3,719.9	2,199.44	1,574.0
Telecom (%) Share	54.1	35.5	26.6	21.9	17.0	5.0



Telecom Investment

(US\$ Million)

Services	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Cellular	1,420.9	2,584.5	2,337.7	1,229.75	908.8	358.6
LDI	50.5	602.8	403.9	276.75	183.1	108.8
LL	0.3	40.6	342.1	57.37	22.5	18.2
WLL	259.4	747.0	52.8	82.11	23.0	10.2
Total	1,731.1	3,974.8	3,136.4	1,645.98	1,137.51	495.81



Annex-5

Cellular Subscribers

Year Operator	Mobilink	Ufone	Zong	Instaphone	Telenor	Warid	Total
2004-05	7,469,085	2,579,103	924,486	454,147	835,727	508,655	12,771,203
2005-06	17,205,555	7,487,005	1,040,503	336,696	3,573,660	4,863,138	34,506,557
2006-07	26,466,451	14,014,044	1,024,563	333,081	10,701,332	10,620,386	63,159,857
2007-08	32,032,363	18,100,440	3,950,758	351,135	18,125,189	15,489,858	88,019,812
2008-09	29,136,839	20,004,707	6,386,571	34,048	20,893,129	17,886,736	94,342,030
2009-10	32,202,548	19,549,100	6,704,288	0	23,798,221	16,931,687	99,185,844
2010-11	33,378,161	20,533,787	10,927,693	0	26,667,079	17,387,798	108,894,518



Cell Sites by Cellular Operators

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Mobilink	3,935	5,522	7,339	7,903	7,952	7,952
Ufone	1,094	1,644	3,471	4,893	5,713	6,283
Instaphone	211	211	211	211	-	-
Zong	872	1,163	2,328	4,688	5,448	5,596
Telenor	1,738	3,255	5,017	6,123	6,594	6,958
Warid	855	1,930	3,152	4,341	4,419	4,514
Total	8,705	13,725	21,518	28,159	30,126	31,303



Pakistan Telecommunication Authority

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Economic Affairs Team

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Mr. Muhammad Arif Sargana, Director
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Mr. Abdul Rehman, Assistant Director
Mr. Waqas Hassan, IT Officer
Mr. Muhammad Riaz, Admin Officer

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