



**MINISTRY OF INFORMATION TECHNOLOGY
GOVERNMENT OF PAKISTAN**

**TELECOMMUNICATIONS POLICY
2015**



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FOREWORD

Government of Pakistan (GoP) recognises that Telecommunication has become one of the dominant sectors in the economy, contributing to the well being of society and a major contributor to GDP. Telecommunications sector has contributed significantly in connecting the nation and providing socio economic opportunities to the people of Pakistan. The success of this strategically important sector can be attributed to continuity of policies of the GoP and conducive regulatory environment.

GoP believes that although significant proliferation of telecommunications infrastructure through fixed, mobile and nationwide backhaul fiber connectivity has been achieved, Pakistan still faces challenges in terms of diffusion of ICT services .Therefore, it is time to leverage ICT infrastructure for achieving the objective of transforming Pakistan into an information society and knowledge based economy. Timing of review of earlier policies and their integration into a consolidated policy document is therefore critically important. The Telecom Policy 2015 is aimed to facilitate the attainment of an all-embracing national agenda and to transform Pakistan into an economically vibrant, knowledge-based, middle-income country by 2025.



1. BACKGROUND

Telecom Sector in Pakistan was successfully deregulated in 2003 and has witnessed unprecedented growth in teledensity, particularly through mobile penetration. Confidence and interest of investors can be attributed to appropriate and balanced regulations under the consistent policies of the Federal Government. However, critical review of important market metrics like existing penetration of services, market structure, geographical coverage, service pricing etc. is imperative in giving important insights for setting the future course. These metrics have therefore been analysed in detail and a summary of findings is produced below:

1.1 Penetration

Penetration of telecom services has been the hallmark of development of the sector, particularly the mobile sector during the past decade. Compared to a teledensity of about 12% in 2004-05, the service penetration has now grown to a point where there are 76 subscriptions for every 100 people (Table 1):

Service	2004-05	February 2015
Mobile	8.30	73.23
Fixed (LL+WLL)	3.60	3.42
Total (Mobile + Fixed)	11.89	76.65
Fixed broadband	-	6.69
Mobile broadband	-	5.54

Table 1: Penetration, subscriptions per 100 population

While there has been rapid and continuous growth in mobile penetration, the trend in fixed penetration has been mixed. In the last ten years, there has been a marked decline in penetration, initially in wireline access. However, the decline in fixed access has now stabilised. At the same time there has been a marked increase in fixed broadband access to a point where at least 56% of fixed access includes broadband access as a bundled offering. Fixed broadband subscriptions have grown at the rate of 88.5% p.a. since the service was introduced in 2005-6. The current level of fixed broadband teledensity of about 2% implies that at least 10% of the population has access to broadband. Furthermore, after the licensing of 3G/4G services in Pakistan, mobile broadband penetration is expected to grow significantly.

1.2 Market structure

The telecommunications services market in Pakistan is highly competitive. Nevertheless the disparity in size between the smaller and larger players particularly in fixed line segment points towards some shortcomings. Whereas the mobile sector, with five players, has a more balanced outlook in terms of market shares. The fixed sector has consolidated with only one major transnational operator, PTCL, providing long distance, international and access services, although many smaller licensees provide long distance or regional access. Similarly, the difference in scale



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between the mobile operators and the fixed operators and between individual fixed operators is very marked as can be seen in Table 2

	Mobile subscribers (Feb 2015)	Fixed subscribers (Q4 2013)
Mobilink	38,378,938	
Telenor	36,724,230	
Ufone	21,718,480	
Zong	27,693,987	
Warid	12,115,256	
PTCL		4,186,996
Worldcall		533,838
Wateen		308,122
TeleCard		815,316
Wi-Tribe		199,886
NTC		118,736
Sharp/Qubee		80,597
Link Direct		60
Brain Ltd		14,410
Union		4,175
Naya Tel		3,699
Mytel		32
Total	136,630,891	6,265,867

Table 2: Subscribers by licensee

1.3 Coverage

Considering the important element of national coverage of services, the roll out obligations are placed on mobile operators. Keeping in view the effectiveness of these obligations in ensuring a balance between urban and rural areas, the concept continued in the Next Generation Mobile Services (NGMS) license in 2014 auction, which requires licensees to cover 50% of Tehsil headquarters (with a minimum of 20 Tehsil Headquarters in each province) in six years. While this obligation will bring broadband to these locations, there will remain underserved and unserved areas beyond those areas covered by roll out obligations because there will be no commercial viable case for operators. Telecommunications services in these underserved and unserved areas will be supplemented through the USF subsidies. Besides basic services, the USF has enabled the roll out of fibre infrastructure in underserved and unserved areas of the country, used for mobile backhaul as well as for delivery of the universal services themselves. Role of USF in expanding high speed backhaul as well as mobile broadband services to underserved and unserved areas will continue to be important in the future.



1.4 Tariffs

Pakistan has some of the lowest mobile call charges in the world and the affordability of services has contributed immensely to the near ubiquitous uptake. In 2011, the prices of 3 minute mobile calls either on-net or off-net in purchasing power parity (PPP) terms placed Pakistan within the lowest twenty of 161 reporting countries. Fixed access and fixed calls are also relatively low. Access prices in PPP terms placed Pakistan 47th and the price of a 3 minute local call in PPP terms placed Pakistan 63rd out of the same number of reporting countries. The price for broadband access in PPP terms places Pakistan 84th of 162 reporting countries. While consumer affordability is an important element that has to be given due regard in all future policies related to telecoms, a delicate balance has to be struck in terms of industry health and pricing trend that has resulted from hyper competition. Hence, policy emphasis is duly required for creating such a balance.

1.5 Policy Review Drivers

The growth of broadband, particularly mobile broadband, will require rapid expansion in the capacity of backhaul, transit, and international capacity. This expansion will therefore need continued investment in the sector, particularly in fibre infrastructure, as microwave capacity becomes a limiting factor. The development of broadband networks will lead to convergence in the types of content delivered over telecommunications networks and content delivered over broadcasting networks. This convergence also brings with it a requirement for changes in policy and consequential regulation.

Technological innovation is leading to new methods of service provision, particularly in services provided over broadband networks. Instead of embedding services in a network, services can be delivered “over-the-top” (OTT) of the telecommunications network. This innovation means that there are opportunities for efficiently locating service delivery elements, reducing cost and the possibility of new business models. Therefore, the opportunity to provide services is open to new businesses, both domestic and foreign, and it is expected that the telecommunications market will attract entry from many more service providers and will lead to changes in market character and structure.

In view of the effectiveness of mobile broadband to bridge the digital divide, one of the major elements of continued focus globally is the scarce national resource of frequency spectrum. Instead of piecemeal treatment of allocation of frequency spectrum for telecommunications services, Pakistan now requires a comprehensive policy treatment of the subject to ensure that the country is abreast with global developments in technology and associated services and that this national resource is put to most efficient use.

Similarly, unlike the past where supply of services was the only focus of policy due emphasis has now to be accorded to building demand for consumption of services particularly broadband in rural areas. Role of telecoms in the context of taking real fruits of ICTs to the masses through citizen centric services has also necessitated an over haul of the approach adopted for Universal Service provision.

Such changes in the market character and its structure, and the underlying changes in the technology base, are leading to new requirements vis-à-vis regulation of the telecommunications sector. Telecommunications Policy 2015 treats all these major elements that have necessitated a comprehensive review of the previous policies and their integration into one coherent document.



2. POLICY VISION

All provisions of the Policy are meant to realise the Government's vision for the telecommunications sector i.e.:

Universally available, affordable and quality telecommunication services provided through open, competitive, and well managed markets and ubiquitously adopted to the benefit of the economy and society.

2.1 Specific expectations included in this vision comprise:

- (i). **Universally available, affordable and quality telecommunication services.** Such services will be enabled by timely availability of required scarce resources, a technology neutral regulatory environment that facilitates the use of the state-of-the-art technology, and open market structures. Coverage will be extended under obligations placed on licensees. Underserved and unserved areas will be subsidised by the USF. Services will continue to be affordable to consumers through fair competition in telecommunications markets and Quality of service standards will be set to enable consumers for maximal benefit from the services.
- (ii). **Open, competitive, and well managed markets.** The sector will continue to be competitive and duly regulated to ensure fair competition. Market conditions will therefore provide an attractive investment environment and will lead to the efficient provision of services.
- (iii). **Ubiquitous adoption.** A substantial increase in penetration of telecommunications services will be realized through universally available and affordable services, in conjunction with content development and citizen services that provide immediate and long term benefit to consumers.
- (iv). **The benefit to the economy and society.** High penetration of telecommunication services and their resultant use will lead to increased growth in GDP. In relation to society, telecommunication services and appropriately managed information services will improve communication between individuals and their access to information and services, leading to personal development and social cohesion.



3. PRINCIPLES OF POLICY DELIVERY

The following six principles are the basis of the policy and the regulatory mechanism to be developed under this policy.

- (i). **Market driven.** Infrastructure provision and service delivery will be determined by the market forces subject to appropriate regulation.
- (ii). **Appropriate regulation.** The Policy will encourage the development of efficient telecommunication markets. Regulations will aim to promote competition, sector development and migration to new and more efficient methods of delivering services.
- (iii). **Forward looking.** While the Policy is technology neutral, it will permit and promote the provision of contemporary and new services using the latest technology available at the time.
- (iv). **Accelerated digitization.** The Policy will facilitate the development of knowledge based information society with research and innovation, transfer of technology, local manufacturing, content development and employment creation.
- (v). **Universal access.** The Policy will promote access to services for all people and communities. Access is a function of availability, affordability and capacity to use.
- (vi). **Government intervention where necessary.** Government will show leadership, set direction and priorities, manage scarce resources, regulate appropriately and support the provision of services in underserved and unserved areas.



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4. POLICY GOALS

4.1 The Policy Goals listed in Table 3 support the overall vision of the Policy. The specific enabling actions are included in subsequent sections of this Policy.

Area	Goals
Telecommunications market and services	Efficient markets with straightforward entry and exit of qualified entities that have sufficient financial resource to invest in and deliver quality services.
Broadband services	Widespread availability of affordable broadband services provided over fixed or mobile networks with characteristics that support contemporary and new digital applications and content.
Telecommunications infrastructure	Physical infrastructure and rights of way required for the roll out of telecommunications networks that are readily available and accessible through clear processes.
Spectrum	Allocation and assignment of spectrum to maximize social and economic benefits derived from the use of this scarce resource.
Telecommunications law and regulation	A legal and regulatory environment that further promotes (continues) the development of efficient markets and that safeguards consumers.
Use of telecommunications services	Progressive increase in penetration and use of telecommunications services of all kinds, and of applications that enhance social and economic development.
Universal Service Funding	Available and affordable telephony and universal broadband access to enable e/m services for covering under served and unserved population.
Research & Development through the National ICT R&D Fund	An ICT sector, working within the international research and development community that provides applications and relevant content to support Pakistan's developmental aims. An ICT eco-system in Pakistan for the creation of valuable Intellectual Property in ICT, particularly in telecommunications, that may be exploited for the benefit of all sectors, contributing to socio-economic development.
Satellite telecommunications	A balanced approach to encourage local and foreign investment and which promotes the deployment of Fixed, Broadcast and Mobile Satellite Services.

Table 3: Policy goals



5. TELECOMMUNICATIONS MARKET AND SERVICES

The telecommunications sector is now a dynamic and competitive asset that is contributing significantly to the economy of Pakistan. Certain actions will be required to maintain this contribution and to ensure that telecommunications services are offered through:

Efficient markets with straightforward entry and exit of qualified entities that have sufficient financial resource to invest in and deliver high quality services.

This section of the Policy aims at achievement of the goal through measures that are intended to:

- a) Provide sector efficiency and strength, including the introduction of sector management through Competition Rules and the revision of the licensing framework to ensure consistency with the changing market structure. Ensure that a wide range of competitive services are provided in an efficient manner taking account of changing technology, including measures associated with VoIP and over the top services, interconnection, peering and exchanging traffic within Pakistan, international telecommunications and public Wi-Fi hot spots etc.
- b) Ensure international standards of customer service and consumer protection, including measures associated with termination or transfer of a business, the introduction of customer charters and the protection of consumer data and quality services.

5.1 Competition Rules

- 5.1.1 The current competitive and open telecommunications market structure will be maintained.
- 5.1.2 To consolidate the robustness of the market structure, the sector will increasingly be managed through the application of Competition Rules for the telecommunications sector. These Competition Rules will be developed by MoIT as mandated under Section 57 of the Telecom Act and in conformance with the Competition Act 2010. The Competition Rules will govern all competition related matters of the telecommunications sector. These Rules will provide processes for market review, including but not limited to: identifying product markets, determining the respective market power of service providers within each market, determining whether anti-competitive behaviour is prevalent and what remedies should be applied as ex ante or ex post measures. The rules will be based on best international practice for markets with similar levels of competition to those evident in Pakistan. Competition rules to be introduced within 06 months from the issuance of this Policy.
- 5.1.3 A set of initial product markets will be defined on the basis of current international practices and conditions in Pakistan. These will then be used to evaluate specific issues including assessment of Significant Market Power (SMP) in each of these markets and examination of allegations of unfair competition by any licensee. Remedies specified in the Competition Rules may then be applied as appropriate in the case of SMP. Also, if allegations of unfair competition are substantiated as a result of regulatory process, remedies will be clearly defined in the Competition rules.
- 5.1.4 Product markets may themselves comprise a number of geographic markets representing different market conditions. Separate wholesale and retail product markets may be defined.



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- 5.1.5 The test for SMP will be based on international best practices taking account of many ways in which a licensee may achieve and maintain such a power. The test for significant market power will consider individual, joint or collective market power.
- 5.1.6 The criteria that may be used to test for SMP for an individual licensee will include, but will not be limited to any combination of: market share, overall size of the licensee, control of infrastructure not easily duplicated, technological advances and superiority, developments, absence of or low countervailing buying power, easy or privileged access to capital market and financial resources, product / service diversification, economies of scale and scope, vertical integration, a highly developed distribution and sales network, absence of potential competition, barriers to expansion, ease of market entry, excess profitability, lack of active competition on non-price factors, barriers to switching and customers' ability to access and use information on prices and other service aspects.
- 5.1.7 The assessment of joint or collective dominance is an evaluation of characteristics of the market that make it conducive to tacit coordination / collusion and whether such coordination is sustainable. Criteria includes but is not limited to any combination thereof: market concentration, transparency, maturity of the market, growth (particularly stagnant or moderate demand growth), low elasticity of demand, homogeneous product, similar cost structures, similar market shares, lack of technical innovation (mature technology), absence of excess capacity, high barriers to entry, lack of countervailing buying power, lack of potential competition, various kinds of informal or other links between the undertakings in the market, retaliatory mechanisms, lack of or reduced scope for price competition, excess profitability, lack of active competition on non-price factors, barriers to switching and customers' ability to access and use information on prices and other service aspects.
- 5.1.8 Once a specific market within the telecommunications sector is managed using the Competition Rules, controls in that market on wholesale and retail pricing will be removed except as required under the Rules or in order to protect the customer from unfair practices as defined in rules, regulation or guidelines.
- 5.1.9 Remedies that may be imposed on operators with Significant Market Power in specific instances may include the following:
- a) The obligation of transparency including the requirement to produce a reference offer - this could apply to both interconnection and access services;
 - b) Obligation of non-discrimination;
 - c) Obligation to produce regulatory accounts with appropriate accounting separation;
 - d) Obligations to provide wholesale telecommunications services;
 - e) Obligations to allow access to, and use of, specific network facilities
 - f) Price control and cost accounting obligations – including the requirement to apply cost orientation - for example this could include Long Run Incremental Cost (LRIC) based interconnection charging;
- 5.1.10 Remedies will be applied, in the first instance, for upstream wholesale markets, if possible, to minimise regulation of downstream retail markets.
- 5.1.11 To make a service available in a fair and non-discriminatory manner, the provider of the service must offer and then deliver it to another service provider at the same price and



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under the same conditions as it offers the service to its own business in all relevant components of the service delivery process from planning, through ordering, implementation, activation, configuration, operation, maintenance and termination of the service.

- 5.1.12 Pricing remedies, including interconnection charges, will follow international best practices for cost plus orientation and will be reviewed on a regular basis but not less than once every two years.
- 5.1.13 The designations of SMP and consequential obligations on licensees at the time of publication of this policy will remain subject to product market review under the Competition Rules.
- 5.1.14 On implementation of the Competition Rules and identification of markets relevant to the services, PTA will review the markets, determine market power of all operators in the market and impose remedies accordingly. In doing so, an orderly transition of remedies will be determined.
- 5.1.15 All other identified markets will be reviewed in accordance with the Competition Rules.
- 5.1.16 Stakeholders will be consulted during the development of the Competition Rules and during application of the Rules through PTA's regulatory framework, where substantial remedies are involved as defined in the framework. The framework will be prepared by PTA and reviewed by the Competition Commission of Pakistan.

5.2 Licensing framework

- 5.2.1 The current licensing regime will continue to apply. Separate category in class licenses regime associated with satellite services will be introduced. However, PTA will conduct bi-annual assessment of market absorption capacity and any new licensing in LL, LDI and WLL sectors will be subject to such assessment.
- 5.2.2 The present licensing regime already distinguishes between those operators that provide infrastructure as well as services and those that provide services alone. Nevertheless, there is a need to further enhance and optimize the licensing regime to cater for emerging technological and market trends.
- 5.2.3 Federal Government (MoIT), in consultation with PTA, will therefore review the licensing policy framework, keeping in view the market state at that time, the move to regulation through Competition Rules, changes in the technology used to provide services and consequential changes in the types of organisations that are telecommunications service providers. It is expected that this review will take place by 31st December 2016. Any proposed changes to the licensing regime will be made in consultation with the sector stakeholders and will be subject to approval by Federal Government (MoIT).
- 5.2.4 Any new licensing regime will be based on international best practices. It will enable new services to be readily provided while meeting service specific requirements (including but not limited to quality of service, customer protection, content acceptability and national security) as they are defined. The licensing regime will continue rights and obligations associated with scarce resources and any obligations on network roll out.



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- 5.2.5 In developing the new licensing regime interalia the following should be taken into account:
- a) Section 20 of the Telecom Act, and in particular, which over-the-top services should be licensed under a “general authorisation” in which a service provider is deemed to hold a license by virtue of the services that it provides and is then subject to the terms of that general authorisation, which may include national security requirements;
 - b) Whether there should be a separation of spectrum and operations licensing;
 - c) The requirements for licensing of satellite services specified elsewhere in this Policy;
 - d) The requirements for licensing public Wi-Fi metropolitan area networks;
 - e) The requirement for spectrum related licensing for non-public telecommunications use such as amateur radio, maritime and aviation uses;
 - f) In addition to the specific cases listed above, the extent to which telecommunications and content services require licensing;
 - g) Whether distinctions should be maintained between different license types, and if not, the implications of removing such distinctions including the rights and obligations of existing licensees that would need to be transitioned;
 - h) The method of licensing of those organisations that hold a broadcasting license to offer telecommunications services to ensure equivalent treatment of alternative infrastructure providers;
 - i) The licensing of telecommunications licensees for the provision of broadcast media and/or distribution service, including the necessity of doing so given the evolving nature of TV.
- 5.2.6 A process for orderly transition in terms of rights and obligations of new and legacy licenses will form a part of the new licensing regime.
- 5.2.7 PTA will continue to prepare requisite license templates, information packages and other necessary measures with the approval of Federal Government (MoIT), to facilitate the licensing process. Issuance of revised licenses would commence as soon as possible after the approval of the revised licensing regime by Federal Government (MoIT).
- 5.2.8 This policy will be without prejudice to the purpose specific licenses given to Government / Semi-Government and Autonomous organizations, as these specific licenses do not allow holders to become commercial operators.

5.3 Termination or transfer of a business

- 5.3.1 Consolidation is a natural free market phenomenon and it is important that customers and other stakeholders are protected in case of consolidation among licensees or sale of existing licences to new players for consumer confidence in the sector to be maintained.
- 5.3.2 Therefore, the regulatory framework applicable on the exit of a licensee from the market or transfer to another company or a business holding a telecommunications license will be strengthened to ensure an orderly termination or transfer of the business, and in particular:
- a) To protect customers and other stakeholders in the business;



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- b) To require the return of any deposits and payment of outstanding dues to PTA and GoP.
 - c) On transfer, to enable the transfer of licenses and obligations to the acquiring business subject to the approval of PTA.
- 5.3.3 The PTA will approve a transfer if the purchasing entity fulfils the criteria for the granting of a license under Section 21 of the Telecom Act or is an existing licensee.
- 5.3.4 These requirements are in addition to the normal responsibilities of a business when winding up or transferring its affairs. Further requirements with respect to spectrum are specified in Section 8.16.

5.4 Service provision

- 5.4.1 Under this Policy, a licensee may provide any telecommunications service consistent with its license at prices that it determines subject to specific restrictions in this policy and any other legal instrument including Rules under the Act or regulations put in place by the Authority. Licensees may from time to time be required to provide additional services as specified by applicable policy directives, regulations or determinations under the Telecom Act or any other Act, law or regulation applicable to licensees.
- 5.4.2 Service characteristics and geographic extent of services are limited by license in two important characteristics, i.e. restriction on mobility and restriction on geographic coverage.
- 5.4.3 A restriction was placed on the use of spectrum assigned to LL licensees for services with limited mobility through terms in their licenses. This limitation meant that the spectrum could not be used to provide the more valuable mobile services and therefore enabled the procurement of spectrum for fixed wireless access at an economic price in comparison with mobile. This restriction on LL to provide only services with limited mobility applies to all telecommunications services provided by an LL licensee.
- 5.4.4 Therefore, no LL license authorizes the provision of a Mobile Telecommunications Service, other than Limited Mobility Communication Service.
- 5.4.5 These limitations on service provision apply irrespective of the price plan used and the type of telecommunications service provided.
- 5.4.6 PTA will develop a framework for applying regulatory remedies and solution within a period of six months.
- 5.4.7 Obligations on quality of service, reporting of service introductions and changes, and price changes as conditions in licenses and regulations are retained.

5.5 VoIP and other Over-the-Top (OTT) services

The model for delivery of Internet based VoIP and other OTT is fundamentally different from the earlier model in which services were embedded in the network. Therefore, most regulatory regimes designed in accordance with the earlier model are not satisfactory when applied in this



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context. The proposed revision to the licensing framework will address this issue in the long term. However, there is an immediate requirement to regulate services such as VoIP and other voice services that are partial or full substitutes for the traditional Public Switched Telephone Network, particularly when the services are provided by unlicensed service providers either in Pakistan or in other countries.

- 5.5.1 PTA, in consultation with Federal Government and stakeholders, will develop appropriate regulatory framework to treat VoIP and other Over-The-Top (OTT) services. The framework will take account of the possibility that service providers offering such services may preferably install equipment in Pakistan where possible, the rapidity of development of such services, the extensive range of such services, the potential requirements for scarce resources (e.g. numbers), requirements for access to emergency services, requirements for lawful interception, cooperation with law enforcement agencies, data retention obligations on operators, impact on operator networks, and where appropriate, the requirement for interconnection with the equivalent embedded or OTT.
- 5.5.2 Taking into account the globally emerging revenue sharing arrangements between local licensees and OTT players, for offering better than normal best-effort or differentiated version of the services, licensed access providers will be free to enter into mutual agreements with those service providers enabling them to monetize OTT service delivery on mutually agreed terms.

5.6 PTCL

The incumbent operator had a significant role in successful deregulation of the sector. Although the state of market development and the status of basic infrastructure and competition in the market differs immensely from the last decade, there still remain some avenues where certain elements of previously applied obligations on the incumbent have to be carried forward until the formulation and implementation of Competition Rules and framework mentioned above. In this context:

- 5.6.1 PTCL will continue to offer non-discriminatory shared access to its last mile infrastructure with related co-location space for service providers to install their own exchange side broadband equipment in PTCL's exchanges. Access to copper and related co-location space will be at cost oriented wholesale rates. PTA will monitor the shared access for fair competition.
- 5.6.2 PTCL will continue to provide backhaul services to licensed telecommunications service providers from its local exchange to the service provider's Point of Presence at wholesale rates.
- 5.6.3 PTCL's backhaul services and service provisioning will be subject to service level agreements between the parties.
- 5.6.4 PTCL will have sufficient dedicated staff for the facilitation of access to its exchanges to ensure speedy provisioning of services specified in Paras 5.6.1 to 5.6.2 within timescales agreed with PTA.
- 5.6.5 PTA will monitor the services and tariffs provided under Paras 5.6.1 to 5.6.2 to ensure fair and non-discriminatory behaviour on behalf of the incumbent.



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- 5.6.6 Obligations on PTCL specified in Paras 5.6.1 to 5.6.4 will be reviewed after the introduction of the Competition Rules by investigating relevant markets using processes defined in the Competition Rules.

5.7 Interconnection

- 5.7.1 The obligation on licensees to interconnect for the origination and termination of telephony traffic remains, so that calls may be established between any two numbers in Pakistan and/or between international calls originated and terminated within/outside Pakistan.
- 5.7.2 Once the Competition Rules are applied to relevant markets, operator specific fixed and mobile termination rates will be determined for those operators with SMP in a relevant fixed or mobile market. A clear and open schedule of charges should be first encouraged and subsequently will be overseen by the PTA to ensure fair and competitive market.
- 5.7.3 For licensees designated as SMP in the relevant market, the schedule of charges and the standard termination charge will be determined using a cost orientation approach appropriate to pricing in a wholesale market. PTA will therefore propose appropriate cost regime for interconnection and apply it to licensees that have SMP in the relevant market. This regime will have due provisions for IP based interconnection inline with international best practices applied to such interconnection in Next Generation Networks (NGN). Any other upcoming technology may also be considered.
- 5.7.4 Termination rates and schedules of charges will be reviewed every three years or earlier if the market conditions so require. Costs will take account of documented plans for infrastructure and service roll out that have been formally approved by the licensee concerned. If such plans change materially over the period during which the termination rate and other charges apply, the termination rate and other charges will be re-determined. The use of such termination rates is intended to promote the roll out of networks.
- 5.7.5 Operators that are not subject to SMP in the relevant market may use commercially agreed termination rates. All licensees will inform PTA of applicable termination rates and any changes to those rates. PTA will arbitrate between the parties if required.
- 5.7.6 Interconnection obligations on individual operators specified in preceding paragraphs will be subject to any action taken as a consequence of the application of the Competition Rules.

5.8 Peering and exchange points

- 5.8.1 Internet and other traffic will be exchanged within Pakistan using local peering or exchange points as far as it is possible to do so, recognising that the use of international peering points in other countries imposes an unnecessary cost burden and a potential security risk. PTA will take appropriate measures in consultation with stakeholders to encourage establishment of local peering and exchange points of IP traffic on legally established gateways in Pakistan.



5.9 International telecommunications

5.9.1 International traffic termination

- 5.9.1.1 Each LDI licensee will enter into commercial agreements with international carriers and other national carriers for originating and terminating switched voice traffic, subject to approval by PTA as per regulations. PTA's approval shall be limited to the enforcement of license conditions, any remedies imposed arising from the regulation of the market under the Competition Rules and regulation arising from national security considerations.
- 5.9.1.2 PTA will continue to determine Approved Settlement Rate (ASR) as appropriate.
- 5.9.1.3 The cable landing stations established by eligible licensees will provide access to any LDI licensee on fair and non-discriminatory terms at its cable landing stations for accessing the bandwidth on submarine cables. Such arrangements will be made on commercial terms.
- 5.9.1.4 PTA will carry a study and formulate recommendations for the Federal Government (MoIT) to facilitate establishment of cable landing stations, under appropriate licenses, to increase diversity and promoting competition in this segment. The study will investigate international best practices especially effects of the practice of capacity swaps in respective countries between licensed operators of a country having capacity on a submarine cable with non-licensed party on the submarine consortium or a party of some other submarine cable system of another country.

5.9.2 Cross border point to point (bilateral) links

- 5.9.2.1 LDI licensees will be eligible for establishing cross border communications links with other countries. Such links may be established using fixed wireline, terrestrial wireless, submarine cables or satellite technologies subject to approval by PTA and if necessary, by relevant authorities in the neighbouring country, based on the following criteria:
- a) Any bilateral links will be terminated at a legally established peering point or landing station in Pakistan.
 - b) Prior approval will be obtained for any spectrum used from FAB in Pakistan and the relevant regulatory authority of the neighbouring state where the cross border link terminates.
 - c) The ITU prescribed regime will be used for cross border interference protection in relation to any wireless communication to prevent interference on both sides of the border by FAB.
 - d) Prior approval will be obtained for any proposed use of satellite communication by respective operators from relevant authorities.
 - e) If on the onward route, the communications link is to be part of any international cable system, the details and legal arrangements of such participation will be made available to the PTA by the applicant. In such a case, a clear roadmap for establishing connectivity with a credible International Partner Consortium at a well-established Point of Presence at the far end will be provided.



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f) All security related requirements (e.g. LI compliance) as specified by the PTA in consultation with the security agencies will be complied with.

5.9.2.2 The PTA will facilitate the process for approving/issuance of NOC for establishment of cross border links. The requests will be evaluated by already established committee comprising the Chairman of the PTA, and a representative from each of the following: Ministry of the Interior, Cabinet Division, Ministry of IT, and Security Agencies. The approval/NOC or denial of a request for a cross border link will be granted in a timely manner ensuring that in any case it may not exceed six weeks.

5.9.2.3 In case of change of ownership of a licensee that operates bilateral links, prior clearance from PTA will be required, and where ownership includes foreign nationals, clearance should be provided in consultation with the Security Agencies.

5.9.3 Long distance carriers will be allowed to enter into international transit agreements with operators from other countries subject to approval by PTA on a case by case basis and subject to Para 5.9.2. If traffic through the bilateral link is to be transited out of Pakistan both on forward and reverse link, clear declaration of the entry and exit points and the size/capacity of the interfaces at such entry and exit points, is required to be made available by the Pakistani LDI licensee involved.

5.10 Public Wi-Fi

5.10.1 Provision of public Wi-Fi hot spots based on international standards will be allowed for commercial use. The PTA will put in place necessary regulations encompassing appropriate adjustments in transmit power and hop length, to ensure that the benefit available from Wi-Fi is maximised within constraints of the ITU-R Radio Regulations and possible interference effects. In this context, a Wi-Fi hot spot is a Wi-Fi node that is attached to a fixed network and provides limited mobility access or fixed access.

5.10.2 Therefore, backhaul for public Wi-Fi hot spots will be provided by a fixed network operator where such services are available. Mobile operators wishing to provide public fixed or limited mobility Wi-Fi services to their own customers may do so under a commercial arrangement with a fixed network operator.

5.10.3 Wi-Fi offloading of mobile traffic to a Wi-Fi node linked to a mobile network or to a Wi-Fi hot spot linked to a fixed network may be undertaken by mobile licensees. In the spirit of the license granted to a mobile operator, the Wi-Fi node linked to a mobile network may be used to provide offloading of mobile traffic only from its own subscribers and from those that are roaming on its network. The Wi-Fi node linked to a mobile network must not be used as a Wi-Fi hot spot that provides fixed or limited mobility services.

5.10.4 PTA will ensure that consumer protection and other regulatory arrangements that apply to ISPs more generally apply to Wi-Fi hot spots.

5.11 Customer services

5.11.1 All licensees will be required to publish a customer charter and provide standard terms and conditions for their customers. In addition, licensees should put in place mechanisms



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to prevent abuse of their systems that results in customers receiving unsolicited or fraudulent communications.

- 5.11.2 All licensees will provide coverage and pricing information to customers in an easily accessible and understandable form.

5.12 Corporate networks

- 5.12.1 Corporate entities that wish to establish intra-corporate networks will continue to be facilitated using services provided by licensees. Corporate networks will be permitted to connect to a licensee's public network in one or more places for the purpose of origination and termination of intra corporate traffic. However, a corporate entity may not engage in any commercial activity that enables transit of commercial voice or data across a corporate network between such points of interconnection.



6. BROADBAND SERVICES

Next Generation Networks (NGN) delivering end user broadband services over an IP network are expected to become the predominant technology during the policy period. While in many areas of the country such infrastructure will become available, the full benefit that broadband will bring to Pakistan will be realized only with:

Widespread availability of affordable broadband services provided over fixed or mobile networks with characteristics that support contemporary and new digital applications and content.

6.1 This Policy contains many measures that are intended to support the goals of universal availability and increasing affordability of broadband services. Specific actions that are intended to support the goal comprise:

a) Initiatives to facilitate and promote fibre and wireless network roll out:

- (i) Fast track processes for rights of way (Section 7.1)
- (ii) In building cabling (Section 7.3)
- (iii) Use of utility infrastructure (Section 7.4)
- (iv) Infrastructure sharing (Section 7.5)
- (v) Development of standards for fibre deployment (Para 7.7.1)
- (vi) Development of a fibre roll out plan agreed with the sector (Para 7.7.3)
- (vii) Introduction of wholesale fibre services (Para 7.7.2)
- (viii) Inclusion of broadband in the set of services to be supported by the USF (Para 12.5.1);
- (ix) A presumption in favour of fibre over copper for all (Para 12.3.3);

b) Initiatives to ensure that spectrum is available to meet demand:

- (i) Development of a rolling spectrum strategy (Section 8.3)
- (ii) Release of spectrum in a timely manner (Section 8.4)
- (iii) Spectrum refarming (Section 8.5)
- (iv) Provision of spectrum for high speed digital microwave transmission (Section 8.8)

c) Initiatives to ensure suitable backhaul arrangements:

- (i) Peering in Pakistan (Section 5.8) which encourages the development of co-location and caching services, improves access to national online services, enables competition, diversity of routing and load sharing on international capacity;

d) Promotion of competition in retail broadband services:

- (i) The introduction of Competition Rules (Section 5)
- (ii) The continued obligations on PTCL to provide access to last mile infrastructure and to provide backhaul services (Section 5.6)

- e) The development of regulatory framework for VoIP (Section 5.5);
- f) Amendments to the provision of Wi-Fi hot spots (Section 5.10);
- g) Development of a broadband quality of service regime (Section 9.3);
- h) Facilitation of the content sector and development of content (Section 9.8).



7. TELECOMMUNICATIONS INFRASTRUCTURE

Provision of telecommunications services with widespread coverage of the nation is dependent on robust and diverse telecom infrastructure. In this context the goal of this policy is to enable

Physical infrastructure and rights of way required for the roll out of telecommunications networks that are readily available and accessible through clear processes.

To achieve this goal, there is a need for nationally agreed processes for the granting of rights of way at prices that lead to investment by telecommunications operators, design codes for outside plant and internal wiring that will allow standardization in the provision of infrastructure and the processes for planning and installation, and guidelines for the use of utility infrastructure. Measures relating to these subjects are intended to reduce the cost and increase the speed of deployment, and provide predictability in terms of costs and timescales.

Infrastructure sharing and national roaming measures will assist in infrastructure deployment through resource sharing.

In addition to these measures aimed at improving provision and access to infrastructure, policy measures associated with infrastructure are also required to encourage and facilitate migration from copper to fibre in long distance and access networks so that broadband can be provided at ever increasing speed, and to ensure infrastructure availability during times of national emergency.

Finally, the availability of electrical power is of critical importance to the telecommunications sector. GoP therefore requires greater use of alternative power sources is conducted by the sector to meet its requirements.

7.1 Rights of Way

7.1.1 As mandated under section 27-A of the Pakistan Telecommunication (Reorganization) Act 1996 (Amended 2006), a coordinated and effective mechanism will be developed for expeditious treatment of rights of way.

7.1.2 Fast track processes associated with the provision of rights of way including space on land and on/ in buildings for the installation of telecommunications infrastructure will be introduced. These should cover both areas that are already developed (for example where a road, footpath and railway infrastructure has been installed) and those to be developed or redeveloped (where an infrastructure has yet to be installed).

7.1.3 MoIT will liaise with other relevant Ministries, Provincial Governments and the Council of Common Interest (CCI) and agencies that have rights of way oversight, including those responsible for electrical power, gas, and water transmission/ distribution and sewage to determine the requirement for a common approach to the provision and coordination of all rights of way. Depending on the outcome of such consultation, MoIT, in consultation with PTA and stakeholders, will develop a new framework. PTA, as per the Law, will have the responsibility to implement this framework.

7.1.4 The framework will include, but will not be limited to:

- a) Standard processes for granting rights of way;
- b) Arbitration processes;
- c) Responsibilities for granting rights of way;



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- d) An outside plant code for roads and footpaths to ensure ducts and access points;
- e) Formulae for reasonably pricing rights of way as required by the Act with the aim of
 - (i) providing a uniform charging mechanism in line with the decision already taken by the Inter Provincial Coordination Committee of the Government of Pakistan applicable to all government organisations including cantonments and areas administered by Defence organisations, and
 - (ii) encouraging site sharing by way of levying no additional charges on sharing a site.

7.1.5 The new framework will be completed by the end of Financial Year 2015-16.

7.2 Outside plant code

7.2.1 An advisory code for local authorities will be developed to ensure that ducts and associated access points are provided in new roads, footpaths and railway tracks, and those that are being rebuilt. PTA will work with the appropriate authorities for roads to develop a code for the construction of telecommunications ducts to be included in the specification for any road or railway construction or rebuilding programme. The code will provide a specification for ducts to carry telecommunications cabling including any necessary related power cabling and voids or spaces to be provided at critical points for the provision of buried or surface mounted equipment chambers. This code will be required also, to determine the terms on which ducts and voids/spaces are provided to telecommunications license holders, taking account of the need to stimulate and facilitate the provision of telecommunications infrastructure. The tariff for the use of such infrastructure will be determined in manner equivalent to that for rights of way. The building costs for ducts, spaces and voids will be included in the budget for the road, footpath or railway track and will be borne by the budget holder.

7.2.2 The code will be implemented by the appropriate local authorities.

7.3 In-building cabling

7.3.1 PTA will review and identify standards for in-building telecommunications cabling for new, existing and re-furbished buildings. PTA will work with the stakeholders in the telecommunications sector, the building industry, architects and cable installers to disseminate such standards.

7.4 Use of utility infrastructure

7.4.1 The use of electricity networks and water, gas & other pipelines to provide rights of way, and in some cases infrastructure for telecommunications, will be promoted by ensuring the legality of such use and the preparation of guidelines for their use & pricing. Economic pricing for the use of such infrastructure as a right of way for telecommunications infrastructure will be applied. Federal Government (MoIT) will consult with owners of utility infrastructure over specific proposals for an economic pricing methodology and issue a policy directive for the calculation of the cost of rights of way.

7.5 Infrastructure sharing

7.5.1 To implement cost savings in the telecoms industry and to mitigate the delays incurred in procuring rights of way for new infrastructure, reducing environmental impact, sharing of



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passive and active infrastructure will be considered before granting a new right of way or space to build towers or for other infrastructure. All licensees may share infrastructure on mutually agreed commercial terms. All licensees with significant market power in a relevant market are obliged to share infrastructure on fair and non-discriminatory terms where practical. To this end, the PTA will develop the necessary regulations or amendments to license conditions, codes of conduct and model contracts, subject to consultation with stakeholders, and arbitrate between licensees in disputes over infrastructure sharing. Infrastructure sharing obligations encompass a requirement to lease facilities on a fair and non-discriminatory basis to other licensed service providers. The facilities provided include space, electrical power, air conditioning, security, cable ducts, space on antenna and towers etc.

- 7.5.2 Infrastructure sharing (passive and active) will be provided based on the regulations and guidelines established by PTA, in consultation with Federal Government (MoIT), on the principles of neutrality, non-discrimination and equal access. The guidelines will take account of established international best practices.

7.6 National roaming

- 7.6.1 In the interest of quick rollout of services and to achieve the objectives related to provision of universal service, national roaming will be encouraged in accordance with mobile license terms. Mobile licensees will be encouraged to offer nationwide service as expeditiously as possible at mutually acceptable terms.
- 7.6.2 Licensees that are designated as SMP in a relevant market under the Competition Rules will be required to introduce national roaming on a fair and non-discriminatory basis.

7.7 Use of fibre

- 7.7.1 The preferred medium for wireline access will be fibre to facilitate delivery of broadband services. The PTA will consult with licensees to determine suitable standards and/or incentives to spur commercial fibre deployment.
- 7.7.2 PTA will put in place the regulatory framework for the provision of wholesale fibre services on a fair and non-discriminatory basis as required in a license or on designation of SMP in a relevant market under the Competition Rules.
- 7.7.3 Migration from copper to fibre in existing access networks will be encouraged. The PTA will consult with the sector on the cost and optimal timing of such a roll out to meet increasing requirements for speed and will present the findings in the form of a roll out plan for the country covering the policy period. In the first instance, this plan should consider broad area types and specify a roll out plan for each such type.

7.8 Telecommunications and National Disaster Management

- 7.8.1 A National Disaster Telecommunications Plan for the provision and use of telecommunications services before, during and after a national disaster will be formulated.
- 7.8.2 The National Plan will specify:



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- a) The services to be provided during each phase of a disaster: these services will comprise of the services to be provided in the disaster hit areas and the services to be provided in other areas to closed user groups and to the general public. The services to be provided will be a subset of those normally available from a licensee.
- b) A catalogue of critical telecommunications elements to be available at times of emergency. Moreover, the terminal devices connecting to telecommunication networks will need to be traceable within a reasonable distance of actual location to facilitate the provision of emergency services.
- c) Network redundancy requirements taking account of the possibility that a national disaster may damage the available telecommunications networks themselves.
- d) The processes to be followed in a national disaster to liaise with licensees about the reconfiguration of their networks and services to provide the specified services and for returning networks and services to their commercial state. Related internal processes are for individual licensees to develop.
- e) The processes to be followed for the urgent replacement of critical infrastructure including obligations on suppliers of such infrastructure.
- f) Audit and testing processes for the Plan.

7.8.3 With respect to the Plan:

- a) Federal Government (MoIT) in consultation with PTA will assess the National and Provincial requirements for critical telecommunications infrastructure and services. In this respect, relevant GoP departments and provincial governments will be consulted.

7.8.4 The PTA, in conjunction with the NDMA and in consultation with licensees, will develop regulations and licensees will adopt regulations that apply when a regional or national emergency has been declared by GoP or a Provincial Government in the legally required manner to promulgate the Plan.

7.8.5 Having promulgated the necessary regulations and periodically thereafter, PTA will require licensees to audit and test their individual national disaster plans and processes.

7.8.6 PTA in conjunction with NDMA may periodically require licensees to participate in national exercises to test overall disaster management processes and plans.

7.9 Alternative power sources

7.9.1 Federal Government (MoIT), in consultation with PTA, telecommunications licensees and other Ministries, will evaluate the feasibility of using alternative power sources. PTA will accordingly develop a roadmap for conversion to alternative power sources to which licensees will conform unless there are over-riding practical and commercial considerations.



8. SPECTRUM

Radio frequency spectrum has played a vital role in the revolutionary development of telecoms globally and represents one of the most critical scarce resources going forward. The goal of GoP in relation to the management of spectrum is to have a sound process for:

Allocation and assignment of spectrum to maximize social and economic benefits that can be derived from the use of this scarce resource.

To achieve this goal, this policy for the first time in the history of telecommunications sector will put in place a comprehensive spectrum management structure establishing a balance between the competing needs of different users and the finite availability of spectrum. The maintenance of this balance is a critical imperative of this policy and requires a number of measures associated with spectrum allocation and assignment. The principal measures concern spectrum harmonization and planning, re-allocation of spectrum in accordance with international norms and spectrum pricing particularly in bands where spectrum is likely to become, or is already in, short supply. Spectrum planning itself will need to take account of potential new spectrum uses. There will be a need to plan for license renewal during the present policy period. Also, flexibility in spectrum use/assignment will help with efficient use. Therefore, this policy contains measures associated with spectrum trading and spectrum sharing that will increase such flexibility.

8.1 Background

- 8.1.1 Obtaining a balance between competing needs and finitely available spectrum will be a key to maximizing economic growth potential of the ICT and digital media sectors.
- 8.1.2 Recognising that spectrum is a valuable public resource belonging to the State and must be used in public interest, the overriding spectrum policy goals are to:
 - Use spectrum in an efficient and flexible manner;
 - Maximize social and economic benefits;
 - Promote stability and transparency;
 - Support the emergence of future telecommunications services.

8.2 Spectrum harmonization

- 8.2.1 Whilst spectrum allocation will continue to be, in principle, technology neutral, it will also continue to be harmonized with ITU radio regulations, guidelines, resolutions and recommendations except where national interest warrants a different determination. Pakistan is within the ITU Region 3. The process of allocating frequencies to services and the regulatory framework is largely determined by external factors such as public policy, legislation and international regulations or agreements. Pakistan will play an active role in international fora, through engagement with relevant government departments, to ensure that as far as possible, the international allocation and regulatory framework accommodates Pakistan's specific requirements. A structured and output based process led by Federal Government (MoIT) will be introduced to this effect.



8.3 Spectrum strategy

- 8.3.1 MoIT, on recommendations of FAB and PTA, will prepare and publish a rolling spectrum strategy to be published every year that provides a programme for the succeeding three years from the date of publication. The Spectrum Strategy will identify:
- For the succeeding period:
 - Plan for existing spectrum allocation audit;
 - Terms of Re-allocation of existing spectrum to legacy licensees;
 - New spectrum bands to be made available;
 - Consequential requirements for spectrum re-farming;
 - Spectrum to be auctioned, with an indication of approximate timescales;
 - Spectrum to be subject to Administrative Incentive Pricing (AIP); and
 - Spectrum to be subject to spectrum trading and/or other market mechanisms.
 - Anticipated longer term developments such as longer term changes in spectrum allocation and availability for use.
- 8.3.2 While stability is important, the strategy must adapt to the changing needs of the telecommunications sector. Therefore, PTA and FAB will continuously review the environment and spectrum needs and in consultation with stakeholders make recommendations to the Federal Government (MoIT) to update the spectrum strategy to ensure that it remains consistent with evolving demands.

8.4 Release of spectrum

- 8.4.1 Spectrum will be released in a timely manner to meet the requirements of new and existing services. This is essential to avoid any constraint on usage or degradation of quality of service arising from lack of spectrum. Regulators, PTA and PEMRA, will take account of the linkage between economic growth and penetration of services when recommending the spectrum to be released and the timing of release. Regulators will take into account the value of spectrum to the economy as well as to the exchequer in determining the details of the mechanism used for valuing and selling spectrum.

8.5 Spectrum refarming

- 8.5.1 Spectrum will be re-farmed where its current use is not in the best social and economic interests of Pakistan, it is underutilised, used inefficiently or its use is inconsistent with international allocations. The refarming will ensure the reassignment of frequencies to uses with greater social and commercial benefits than are attainable from the prevailing assignment of those frequencies. Spectrum to be refarmed will be identified in the rolling spectrum strategy. The requirement of spectrum in the context of national security will be given due consideration as per operational requirements of defence sector.
- 8.5.2 PTA/PEMRA in consultation with FAB will propose a refarming framework to be approved by the Federal Government (MoIT).
- 8.5.3 The Spectrum Refarming Framework will be based on international best practices and market demand scenario. The framework will be a combination of administrative, financial and technical measures aimed at moving incumbent users and hence their equipment out from their spectrum assignments in a particular band either partially or completely so that the band may be allocated to other uses. It will also provide a process



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for estimating the compensation required, where applicable, through a well structured criteria.

- 8.5.4 Federal Government (MoIT), in consultation with PTA/PEMRA and FAB will decide to refarm any spectrum and such decision will be effected through a policy directive.
- 8.5.5 Upon decision by the Federal Government (MoIT) for refarming of a particular band, a Spectrum Refarming Committee comprising of MoIT, FAB, PTA/PEMRA and incumbent users will:
- Estimate the value of the refarmed spectrum using the valuation method to be adopted;
 - Estimate the compensation cost of refarming (for government users only); and
 - Determine timeline for Refarming.
- 8.5.6 The government users who are required to vacate spectrum identified for refarming, may receive compensation for relocating to new spectrum. FAB will assist these spectrum users throughout their transition to a new spectrum band. Funds for compensation may be raised from fees collected from the issuance of licenses that incorporate spectrum assignments in the refarmed band.
- 8.5.7 On refarming, compensation costs will be recovered from the license fees paid through the regulatory authority that collects the fees. PTA will create Spectrum Refarming Fund (SRF) and allocate an amount, to be determined by the Refarming Committee, from the fees it collects for this fund. Payment of compensation to the government users from whom the spectrum is refarmed, if required, will be made as approved by the Committee on the basis of predefined criteria for the purpose.
- 8.5.8 Re-farming includes but is not limited to the bands associated with the uses in Section 8.6.

8.6 Analogue UHF TV spectrum and MMDS spectrum

- 8.6.1 The use of digital technologies has dramatically changed the way in which telecommunication and broadcast services are delivered to and accessed by users. During the Policy period, FAB will determine the spectrum allocated to analogue UHF TV services that may be reallocated either wholly or in part to telecommunication services, in order to achieve a digital dividend. MMDS spectrum will also be reallocated to telecommunication/converged services to achieve international best practice and to maximize the benefit of the spectrum.
- 8.6.2 Digital Switch over Policy, Plan and Cut over timelines to be determined through close collaboration of the Ministry of Information and Broadcasting (MoIB) and MoIT in consultation with other stakeholders.

8.7 Spectrum assignment

- 8.7.1 Spectrum will be assigned in a manner that recognises the value of the spectrum to the prospective licensee and to the economy as a whole, and in a manner that is consistent with the Spectrum Strategy. Where spectrum is licensed, a fee will be charged based on the most appropriate of the following methods:



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- a) **Auctions** will be the preferred method of assigning access rights to blocks of spectrum for dedicated use. To the extent possible, these will be technology neutral and include coverage in minimum time frame and quality of service obligations in the license to maximize public benefit. Where a band is to be shared between users and / or applications, blocks of spectrum will be created that reflect these joint uses.
 - b) **Administrative Incentive Pricing (AIP)** reflects the opportunity cost of spectrum to encourage efficient use of spectrum and will be introduced for congested spectrum that has not been subject to an auction, for example microwave spectrum. AIP improves the efficient use of spectrum by setting the price for spectrum at a level that encourages the user to consider alternatives and encourages spectrum use to move to the highest value application.
 - c) **Administrative Cost Recovery (ACR)** will be adopted where auctions and AIP are inappropriate, for example in aeronautical, maritime and amateur radio bands. The fee will be set to reflect the costs incurred in administering spectrum in the band from which frequency is to be assigned. This approach will be applied to spectrum that is not congested and where the risk of interference is low.
- 8.7.2 There may be instances where following an auction, one or more licensee may require further spectrum to meet demand for its services. Such demand may, in principle, be fulfilled by further planned spectrum auctions of additional spectrum. In this regard, PTA will propose policy recommendations to the Federal Government (MoIT) for the release of further spectrum where available to licensees that have already been assigned spectrum through a legitimate mechanism previously. In doing so, PTA in consultation with FAB, will take account of the availability of relevant spectrum, plans for further planned release of spectrum, the terms and benchmarks of the original auction where applicable and the licenses to which the spectrum will be assigned. The further assignment of spectrum will be fair and will ensure that it does not discriminate against other licensees.
- 8.7.3 The ASAF will continue as defined in Section 4.4 and Appendix B of the 2004 Mobile Cellular Policy till AIP is introduced consequent to this policy. The fee structure will be redefined by the PTA to include additional spectrum assigned to mobile services. The ASAF will not be charged on spectrum assignments subject to ACR. The ASAF will be taken into account in determining any AIP price. The ASAF will be replaced by AIP, when AIP payments cover at least FAB budget requirements that are currently funded through the ASAF. The determination of the budgetary elements covered by the ASAF till the time it exists, will be fair to all spectrum users and will not discriminate between them. Therefore, a cost allocation study will be conducted by PTA for the purpose of allocating the costs of the FAB Budget to various types of spectrum assignees.
- 8.7.4 Any methods of assigning and pricing spectrum used will be consistent with the following principles:
- Be in accordance with Pakistan Table of Frequency Allocations;
 - Be fair, transparent and non-discriminatory;
 - Encourage fair competition where appropriate;
 - Establish a fee which is economically justified when balanced with the investment
 - Take account of any roll-out obligations specified;
 - Be simple to execute;
 - Discourage collusion and predatory behaviour.



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- 8.7.5 The PTA will propose to Federal Government (MoIT) the methods of assigning and pricing frequency spectrum after consultation with stakeholders.
- 8.7.6 These methods will apply to all assignments, including those for telecommunications, broadcast and for any other use of spectrum to avoid discrimination between prospective spectrum users.

8.8 Spectrum for digital microwave communication

- 8.8.1 Spectrum will be allocated for digital microwave communication to provide backhaul for fixed and mobile services. The roll out of future technologies, in the absence of fibre, is likely to create a bottleneck in backhaul. With this in view, and before the bottleneck arises, the microwave spectrum will henceforth be allocated, assigned and charged for to licensees and other users through Administrative Incentive Pricing mechanism to ensure rational use of spectrum for the purpose.
- 8.8.2 Digital microwave spectrum may be used by the licensees for any point-point application including access to customers as long as they are licensed for the service. For example, it can be used by a LL/ LDI licensee to connect to a customer site.

8.9 Continuing spectrum rights and obligations

- 8.9.1 LDI licensees will continue to be entitled to radio spectrum (where available) for point-to-point and/or backbone links, within the parameters of their licenses, on payment of spectrum charges to PTA.
- 8.9.2 LL licensees will continue to be entitled to radio spectrum for WLL systems, and also spectrum for point-to-point links, within the parameters of their licenses, on payment of spectrum charges as specified in this policy.
- 8.9.3 LL and LDI licensees that receive spectrum will continue to be required to meet defined usage milestones, failing which they will be required to relinquish their rights to use the assigned spectrum.

8.10 Relinquished spectrum rights

- 8.10.1 Licensees will relinquish rights to spectrum that is no longer needed for their operations. Un-used assigned spectrum will be withdrawn if a licensee fails to begin operations within eighteen months of award.

8.11 License renewal where the license includes spectrum assignments

- 8.11.1 Renewal of license and associated spectrum at the end of a license period will be as per the policy of the Government. PTA will in a timely manner initiate the process in accordance with terms and conditions of the license.
- 8.11.2 In case of renewal of licences, PTA will make recommendations to Federal Government (MoIT) within the timelines stipulated in the respective licenses.
- 8.11.3 Other spectrum not subject to license renewal terms will be priced in accordance with the applicable spectrum pricing method specified in Section 8.7.



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8.11.4 Where separate payments for microwave and mobile spectrum have been introduced subsequent to the initial assignment of mobile spectrum, the spectrum fees associated with the mobile spectrum will be determined under the terms of the applicable license. Any microwave spectrum will then be charged using the AIP method in place.

8.12 Introduction of AIP for microwave spectrum assignments

8.12.1 AIP will be introduced for microwave spectrum assignments. In the past microwave spectrum for backhauling purposes was assigned to operators in line with Federal Government policies based on the market conditions prevailing at that time. It has been observed that operators are requesting additional spectrum for backhaul transmission instead of utilizing alternate means or utilizing their existing assignments more efficiently. There is a need to introduce an appropriate charging mechanism for the microwave spectrum assignments in order to ensure efficient and economical use of the scarce resource as per international best practices. The existing licenses will be modified accordingly.

8.12.2 Therefore, PTA will establish a regulatory framework for the introduction of AIP for microwave spectrum for new and existing assignments. Practice hitherto has been to bundle microwave spectrum used for backhaul from base stations with spectrum for fixed and mobile access in a single license fee payment. The introduction of AIP will require payments for microwave spectrum to be made separately. This unbundling of the fee structure will improve the efficiency with which licensees use microwave spectrum. It is not intended to increase the fees paid overall by licensees for spectrum already acquired. Hence, the framework for the introduction of AIP for microwave spectrum will:

- a) Estimate the value of microwave spectrum on an AIP basis taking account of other means, including fibre, of providing backhaul.
- b) Allow for a phased introduction of AIP that recognises that licensees will need time to review and revise their use of microwave spectrum, implement alternative methods of providing backhaul and recognises also the investment that has been made in microwave equipment.
- c) Encourage the implementation of alternative methods of providing backhaul and increased efficiency in the use of microwave spectrum.
- d) Enable operators that keep up with the phased introduction of AIP not to increase the overall cost of backhaul.

8.12.3 PTA will consult stakeholders on the framework for AIP prior to its approval by the Federal Government (MoIT).

8.13 Unlicensed access

8.13.1 License-exempt spectrum may continue to be used for fixed access and backhaul by LL and CVAS licensees, subject to any restrictions imposed by PTA in line with international best practices and standards.

8.13.2 License-exempt spectrum will be made available in a manner consistent with ITU-R Radio Regulations. Devices will be type approved, conform to international standards or those published by PTA and access will be on a non-interference and non-protection basis.



8.14 Test and development licenses

- 8.14.1 Temporary Test and Development Licenses will be issued by PTA, as appropriate. The industry and other eligible organizations will be able to test and develop new services by the assignment of spectrum with specific conditions of use for research, development, testing and demonstration activities and that such licenses will be made available within three months of application.
- 8.14.2 PTA will prepare a framework for test and development licenses including criteria for the provision of licenses, license conditions, the duration of the licenses, the terms and conditions of reissuing the licenses on expiry. PTA will consult stakeholders on the framework and then finalize the test and development framework to enable eligible organisations to acquire such licenses. PTA will forward the applications to FAB for allocation of suitable frequency band for any such request as per procedure in vogue. In defining the requirements for an organisation to be eligible, PTA will consider the following types of organisations: telecommunications licensees, equipment manufacturers and research & development organizations, in order to encourage the highest level of technology and application innovation in Pakistan as possible.

8.15 Spectrum trading

- 8.15.1 The purpose of spectrum trading is to allow markets to determine the best use of spectrum.
- 8.15.2 Spectrum trading will be permitted under specific conditions. Spectrum trading occurs through the outright sale of the rights and obligations or term lease, subject to license conditions and approval by PTA / PEMRA under intimation to FAB.
- 8.15.3 A spectrum trading framework will be developed by the PTA, PEMRA and FAB, and will be subject to policy level approval by Federal Government (MoIT). Factors like spectrum capping shall be considered while developing such framework.
- 8.15.4 In relation to trading, the seller will be expected to pay a Trading Fee. A Processing Fee and any other applicable fee will be levied to cover re-issuing of licenses.
- 8.15.5 The decision to trade is a commercial decision for the license holder. The terms of the trade will be a commercial agreement between licensees.
- 8.15.6 Spectrum will be traded only if the relevant license that contains the spectrum assignment to be traded, permits trading. Spectrum assigned to a licensee without such a permit will not be traded unless Federal Government (MoIT) specifically authorises the trade as being in the public interest.
- 8.15.7 Nevertheless, spectrum trading will be permitted only for spectrum that has been acquired through a pricing arrangement that represents its market value (i.e. auction or AIP). Spectrum subject to Administrative Cost Recovery or other forms of nominal pricing will not be traded.
- 8.15.8 Spectrum may be traded between holders of the same license type only. For example, spectrum trading may take place between LL licensees or mobile licensees but not between an LL licensee and a mobile licensee to maintain the basic value of the different categories of spectrum. Spectrum will not be traded by any licensee with the necessary



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license conditions until the licensee has fulfilled its payment and roll out obligations unless it also transfers its roll out obligations with the trade and same is verified and authorized by PTA. The eligibility for receiving spectrum through a trade will be the same as the eligibility for assignment of spectrum by FAB. The acquirer of spectrum will be required to obtain (or already hold) the appropriate telecommunications license and to meet the terms of that license.

- 8.15.9 The framework for spectrum trading will take into account the effects of such trading on competition, national security, public health and safety, compliance with the national laws and policies and compliance with international obligations and international relations.
- 8.15.10 Swapping of spectrum will be considered as a two-way spectrum trade subject to approval by PTA and FAB.

8.16 Spectrum sharing

- 8.16.1 Spectrum may be shared between any licensees with the necessary license conditions to enable the sharing.
- 8.16.2 A spectrum sharing framework will be developed by PTA and PEMRA in consultation with FAB and stakeholders and will be subject to policy level approval by Federal Government (MoIT).
- 8.16.3 The applicant licensees will be required to jointly inform PTA/ PEMRA and FAB regarding intended sharing. PTA / PEMRA in consultation with FAB will determine whether the sharing is to be permitted taking into account its effect on competition, national security, compliance with national laws and policies and compliance with international obligations and international relations.
- 8.16.4 Spectrum will not be traded by any licensee with the necessary license conditions until the licensee has fulfilled its payment obligations to GoP. Permission to share spectrum will not absolve the assigned licensee from any roll out and payment obligations that are conditions of its license or imposed by regulations.

8.17 Mergers and acquisitions

- 8.17.1 On merger or acquisition of a company with spectrum assigned under its telecommunications license, spectrum and license rights and obligations of licenses will be transferable to the merged or acquiring organisation. Where Mergers and Acquisitions are concerned, access to spectrum, and the associated license, is a critical asset of companies that rely on wireless communications.
- 8.17.2 Whether a merger or acquisition should be allowed to proceed is a competition matter which is outside the jurisdiction of spectrum management, and legitimate mergers should not be impeded by inability to transfer spectrum licenses. Therefore, except where there are overriding technical reasons, or reasons arising out of the national interest, the spectrum rights and obligations of licenses will be transferable to the merged or acquiring organisation. PTA/ PEMRA are to intimate FAB of any merger/ acquisition.
- 8.17.3 Mergers and acquisitions will be allowed subject to paragraph 8.17.1 and subject to having met all license obligations including payment and roll out obligations.



8.18 Interference protection

- 8.18.1 Complaints and enforcement: License holders expect the swift resolution of interference issues, which is essential for well managed spectrum. FAB is responsible for investigating interference complaints and the PTA and PEMRA are responsible for undertaking enforcement actions. PTA and PEMRA will attempt to resolve interference issues notified to them within 30 days of notification.



9. TELECOMMUNICATIONS LAW AND REGULATION

Telecommunications law and regulation has enabled the development of a telecommunications sector with multiple licensed operators and service providers, and has laid down certain obligations on licensees to safeguard users. The goal of the GoP in relation to this body of law and regulation is:

A legal and regulatory environment that further promotes (continues) the development of efficient markets and that safeguards users.

Section 5 specifies actions that are intended to support the development of efficient markets. This section covers additions to regulation necessary to safeguard users, ensure optimal functioning of networks with technology change, and to meet the needs of a changing environment where telecommunications networks deliver a wide variety of content from many different sources. The areas in which regulation is to be strengthened include quality of service particularly broadband quality of service and affordability of services.

9.1 Market regulation

9.1.1 Section 5 specifies actions that are intended to support the development of efficient markets and reduce regulatory risk.

9.2 Quality of service

9.2.1 It is recognised that licensees are subject to quality of service parameters specified in their licenses.

9.2.2 PTA will ensure that common services are subject to international quality of service standards based on the existing or emerging KPIs. PTA will monitor customer service performance. Service monitoring will include, but not be limited to:

- a) Call centre performance: call waiting time including variance in call waiting time, problem resolution success rate, the mean time required to resolve problems including variance, and customer perception of customer service performance;
- b) Other problem resolution performance;
- c) Billing accuracy and billing problems, including billing problem resolution performance;
- d) Service activation performance including time taken to activate common services including variance;
- e) Service termination performance including time taken to terminate common services including variance.

9.3 Broadband quality of service

9.3.1 Steps will be taken to improve Broadband quality of service for customers. The PTA will monitor broadband quality of service provided by all service providers against its KPIs including committed bandwidth and outage commitments with the customers, will publish the results and take action against service provider for violation of the license condition and consumer contracts.



9.4 Affordable services

- 9.4.1 PTA will ensure that all licensees provide affordable services. PTA will review the appropriateness and adequacy of telecom services' prices available from licensees on a regular basis. The prices will be on the basis of cost plus a reasonable rate of return.

9.5 Numbering

- 9.5.1 Licensed service providers that offer new voice services whose subscribers may be reached via the PSTN will be provided with suitable number ranges.
- 9.5.2 The policy supports transition to IPv6 within a reasonable timeline, preferably by 2017. The transition would take into account national security requirements.

9.6 Type approval regime for telecommunication terminal equipment

- 9.6.1 Telecommunications Terminal equipment will be subject to type approval based on international norms and testing by one of the approved set of laboratories. Approved laboratories may be in countries other than Pakistan.
- 9.6.2 The use of phones with duplicate identifiers and stolen phones will be blocked. In this regard, PTA will develop a regulatory framework to ensure that:
- a) Stolen phones, blocked phones, and phones with no duplicate or non standard identifiers are blocked from use in Pakistan, and
 - b) Mobile licensees actively identify such phones on their networks and will maintain and update industry wide database with information about such phones for the benefit of the mobile services sector worldwide.
- 9.6.3 This framework will be developed in consultation with all relevant stakeholders.
- 9.6.4 The framework will specify that:
- a) Mobile terminal equipment must have a valid and unique IMEI or equivalent identifier.
 - b) Mobile licensees will become members of the International Mobile Equipment Identity Database (IMEI DB, formerly the CEIR) operated by the GSMA, or others as applicable.
 - c) Mobile licensees will include countries that are the source of a large number of stolen devices to Pakistan in their IMEI DB notification profile.
 - d) Mobile licensees will report stolen terminal equipment and terminal equipment with invalid identifiers to the IMEI DB on identification as such.
 - e) Mobile licensees will block stolen terminal equipment once reported.
 - f) Mobile licensees will not allow the registration of new terminal equipment with invalid identifiers on their networks.
 - g) Blocked identifiers will not be activated.



9.7 Environmental obligations

- 9.7.1 The PTA will put in place an environmental regulatory framework for the sector consistent with the relevant laws, policies and regulations in consultation with stakeholders including licensees and those agencies responsible for the environment at the Federal and Provincial level.
- 9.7.2 To this end, PTA will establish, within the environmental regulatory framework, a monitoring mechanism and monitor the performance of licensees in the following areas:
- a) Use of renewable sources of energy
 - b) CO₂ emissions arising from their business activities
 - c) Other forms of air pollution such as the use of diesel and other methods of electrical power generation arising from their business activities
 - d) Management and documentation of the recycling and disposal of electronic waste, hazardous chemicals and other hazardous materials
 - e) Preservation and restoration of the environment after civil works.
- 9.7.3 PTA will publish the environmental performance of licensees it monitors against the defined targets on its website and through other channels, as appropriate. Licensees that do not meet defined targets will be reported to the authorities responsible for the environment. The PTA will publish awards for those organisations that meet a clearly specified environmental standard.
- 9.7.4 PTA will monitor the environmental impact of licensees and the authority to define standards for the sector and issue orders to licensees and take other action on contravention of such standards.

9.8 Content management

- 9.8.1 Telecommunications services provide alternate or exclusive channels for the supply of various forms of content. Examples include: broadcast TV, video on demand, still images, radio, music and other sound files, books and reports, games, financial services, e-commerce services, including the sale of restricted products such as pharmaceuticals, health services and education services. Nevertheless, such content may be, and generally is, supplied through other channels also.
- 9.8.2 With respect to the delivery of content, the proper role of telecommunications policy and regulation is to support the development and maintenance of telecommunications services with appropriate characteristics to facilitate the delivery of content by a telecommunications network. PTA is required to manage content over the internet through integrated licenses or ISPs as per their licensing conditions under the Act. Federal Government (MoIT) recommended to the GoP to authorize PTA to determine the characteristic of content irrespective of the channel used for its supply. PTA will have to consider the characteristics of each channel in determining how to manage its content which it will do under a well defined framework.
- 9.8.3 This framework will enable PTA to monitor and manage content including any blasphemous and pornographic material in conflict with the principles of Islamic way of life as reflected in the Objectives Resolution and Article 31 of the Constitution, material viewed as leading to the exploitation or abuse of children or other vulnerable groups, and



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material that is considered to be a direct incitement to commit a crime of a serious nature and detrimental to national security, or any other category stipulated in any other law. The framework would nevertheless protect the right to freedom of speech and expression under Article 19 of the Constitution subject to any reasonable restrictions imposed by the Constitution and the law and cover public networks.

- 9.8.4 PTA under its inherent mandate on regulation of “access to content” through the licensees will perform the assigned role with requisite consultation of stake holders vis-à-vis categorization of content whose access is regulated. PTA will also build its capacity to handle this function and Regulations and/or SOP will be put in place to manage this activity.
- 9.8.5 Although mechanism mentioned above will take into account all freedom of information safeguards provided under the Constitution and law with requisite application of limits and constraints, Telecommunications operators and service providers will nevertheless need to be mindful of any content filtering and blocking that may be obligated by PTA either by itself or on recommendation of a concerned agency and/or a duly mandated forum as the case may be.
- 9.8.6 Government recognizes that telecommunications operators and service providers: LL, WLL, mobile licensees, class licensees, cable landing stations, etc. carry content which is outside their control as such content is under the control of third parties. As such, they are acting as intermediaries when they do not originate the content. Government will not require intermediaries to identify content to be filtered or blocked.

9.9 Lawful Interception

- 9.9.1 The Federal Government (MoIT) will prescribe rules for Lawful Interception (LI) as mandated under Telecommunication Act. In the light of these rules, framework will be prepared jointly by PTA and authorized agencies/organizations of the GoP. The rules will consider inter alia:
- a) Mechanism for provisioning, maintenance, upgradation and expansion of LI facilities.
 - b) Possibility of joint provisioning of LI facilities by Licensees.
 - c) Provision for multi-stakeholder forum in the Federal Government (MoIT) to review and recommend adjustments in LI mechanisms and incidental regulatory adjustments.
- 9.9.2 Further, the development of new ways of delivering telecommunications services and the new services that are evolving means that lawful interception is a constantly evolving requirement. Lawful Interception requirement of such evolving services will preferably be met before commencement of such services or within an agreed upon timeframe. Failing to comply with the agreed timelines will lead to the application of due regulatory process.
- 9.9.3 The responsibility of retention of communication sessions related information will be the responsibility of the licensee as prescribed by GoP.



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- 9.9.4 The lawful interception functional model and systems will be transparent and based on international standards, such as ETSI.
- 9.9.5 All government entities providing telecom services as licensees or otherwise under a specific authorization shall provide LI facility as per provisions of their licenses or authorization.

9.10 Amended law and regulation

- 9.10.1 In order to realise the objectives of this Policy, all necessary changes to the Acts, Ordinances and Rules will be carried out. The relevant documents include but not limited to:
- The Pakistan Telecommunications (Reorganization) Act - 1996 as amended to 2006;
 - The Pakistan Electronic Media Regulatory Authority Ordinance 2002 as amended by the Pakistan Electronic Media Regulatory Authority (Amendment) Act, 2007 (Act No.II of 2007);
 - The Telecommunications Rules (S.R.O. 847 (I)/2000).
- 9.10.2 In addition, the PTA and other regulatory bodies will carry out necessary changes to regulations and other subsidiary instruments necessary to enable the policy.

9.11 Continuing policies and rules

- 9.11.1 The following Policy Directives will continue to apply:
- Policy Directive under Section 8 of Pakistan Telecommunications (Re-organisation) Act, 1996 regarding closure of telecom services due to national security concerns.
 - Guidelines for Mitigating Environmental and Health Related Effects of the Cellular Base Station Antennas.
 - Policy on Jammer and Disabler Devices for Blocking Cellular Communications and Related Services.
 - Policy Directive for Mobile Subscriber Documentation and Antecedent Verification.
 - Policy Guidelines on Mobile Network Operators and Mobile Virtual Network Operators.
 - Policy to Support Technical Implementation of Mobile Banking including Mobile Money Transfers and Remittances.
 - Policy Directive for inter-operator network redundancies.

9.12 Role of the PTA and other organisations

- 9.12.1 The PTA will undertake its roles as defined in the Telecommunications Act in a proactive manner and to act accordingly to implement this Policy in areas where Policy has been specified and to adhere to the generally stated principles within this Policy where specific Policy measures have not been specified.
- 9.12.2 Federal Government (MoIT) in collaboration with PTA & FAB will devise a framework for sector contribution to Standards Development Organizations (SDOs).



10. USE OF TELECOMMUNICATION SERVICES

The use of telecommunications drives socio-economic development. Once services are available, other factors need to be addressed to ensure widespread use. Telecommunications services themselves must be affordable, and where this is difficult to achieve, community based access to telecommunications and IT services need to be provided. Public institutions need access to telecommunications services and the IT applications that will facilitate the provision of their services. Finally, telecommunications services must meet quality and reliability standards for users to be able to depend on them in their daily lives. Telecommunications policy goal in this regard is to enable:

Progressive increase in penetration and use of telecommunications services of all kinds and of applications that enhance social and economic development.

- 10.1 This policy contains the following measures in support of this goal:
- a) To increase service availability
 - i. Public Wi-Fi (Section 5.10)
 - ii. Extension of service availability in unserved and underserved areas (Section 12)
 - b) To maintain affordable prices by maintaining an efficient and competitive telecommunications market
 - i. Introduction of Competition Rules (Section 5.1)
 - ii. Continuation of obligations to provide wholesale services that reduce costs for operators that do not have infrastructure at particular locations (Section 5.6)
 - iii. Maintenance of a peering and interconnection regime (Section 5.8)
 - iv. A requirement on PTA to ensure availability of affordable services are available (Section 9.4)
 - c) To provide community access particularly for those who cannot afford personal access to telecommunications services (Para 12.1.1)
 - d) To facilitate development of applications that will increase the value of telecommunications services (Section 12.9, 13.2)
 - e) To increase the range and quality of service and hence promote an increase in service attractiveness.
 - i. Enabling indigenous and established “over-the-top-services (OTT)” (Section 5.5).
 - ii. Introducing customer charters with international Quality of Service (QoS) standards (Section 5.11).
 - iii. Improving quality of service, and specifically broadband quality of service (Sections 9.2 and 9.3) in accordance with international standards.



11. COMMUNICATION NETWORKS AND ANALYSIS FUNCTIONS

- 11.1 A new concept of national borders has emerged with the advancement of telecommunications globally; the Digital Borders. It requires policy initiatives for protection of telecommunication networks and information flowing on these networks.
- 11.2 In order to be able to carry out communications analysis functions related to telecommunication sector and networks including incoming VoIP, Grey traffic analysis & mitigation, network threat detection, malware analysis, web analysis and legally mandated content filtering, IP consumer trends and OTT applications visibility, critical infrastructure information protection, PTA will deploy a solution under a framework ensuring long term sustainability through constant updates and upgrades in order to keep pace with ever changing technological trends and capacity requirements. Due to immense value addition in terms of network and communications security for the telecommunications industry, a sustainable model based on industry inclusion and contribution through membership may also be considered.



12. UNIVERSAL SERVICE

The use of industry contributed Universal Service Fund (USF) has played a significant role in bridging the digital divide between urban and rural areas. Going forward, the USF will be particularly important for enablement of universal access to broadband services and applications. The universal access goal of the telecom policy going forward will be to provide;

Available and affordable telephony and universal broadband access to enable e/m services for covering all under served and unserved population.

12.1 USF focus

12.1.1 The established USF policy will continue, funded at its present level, and will focus on:

- a) Making available affordable voice telephony and broadband access in unserved and under-served areas so as to meet an overall goal of providing services to such segments of the population.
- b) Community Broadband Services that provide telephony and broadband access to the Internet in general and government services in particular.
- c) Broadband access to education, health, and other institutions in USF Contract Areas sufficient to meet the need of the user community within the institution.

12.1.2 The USF will not cover areas that are or will be covered by roll out obligations on particular licensees.

12.2 USF funding

12.2.1 Contributions for the USF will be collected from a percentage of licensed operators' revenues (the USF Contribution), and may be collected from other sources, as specified in the Telecommunications Act and USF Rules made there under.

12.2.2 The USF Contribution will be limited to a maximum of 1.5% of a licensee's gross revenue minus inter-operator payments and PTA/FAB mandated payments. In addition to this the Access Promotion Contribution (APC), as applicable from time to time, and any other source of funding.

12.3 Use of the USF

12.3.1 Funds will be provided for capital expenditure and for operating expenditure associated with the provision of services in a Contract Area for a specified, limited start-up period during which the USF Contractor implements its infrastructure and grows its customer base and provides the USF Services. Funding beyond that period will not be available, since the contractor is assumed to have factored in the risk of failure when constructing its offer.

12.3.2 The USF will also be used to fund the development and delivery of services, infrastructure or other related items, through the Special Projects mechanism.

12.3.3 There should be a presumption in favour of the use of fibre over microwave in backhaul and fibre over copper in wireline access to meet growing fixed and mobile broadband requirements.



12.4 Eligibility for applying for USF contracts

- 12.4.1 All licensed operators that contribute to USF will be eligible to apply for all Universal Service Fund contracts, subject to having met all license obligations including payment and roll out obligations.
- 12.4.2 No restrictions will be placed on eligibility arising from success in earlier auctions. Competition issues that may arise will be resolved using the Competition Rules introduced in this Policy by the Federal Government. Consortia are allowed to bid for USF contracts, provided the specific requirements are met.

12.5 The USF Services

- 12.5.1 The Services falling under scope of USF will include the following retail services:
- a) Telephone services to local, national, mobile, toll free , premium rate and international numbers, including facilities for incoming calls from all sources, accessed from public access points as well as private lines;
 - b) Access to emergency services (as under voice licenses);
 - c) Broadband Internet access;
 - d) E-mail, fax and other related services;
 - e) Telecentres, including the equipment, buildings and other capex and opex associated with the Telecentre itself;
 - f) Broadband Internet access to support multiple terminals at telecentres at speeds consistent with the size of the concurrent user base;
 - g) In case of special projects, narrowband and broadband wireline access to specified institutions such as educational and health care institutions with suitable capacity for the size and characteristics of the user base. These institutions may be provided with fibre access.
- 12.5.2 The USF Services will include the following wholesale services to be offered after the start of the supply of the Supported Services according to a timetable specified and approved by the USF Board.
- a) Multi-Megabit and multi-Gigabit fibre based transit and backhaul services within the USF Contract Area;
 - b) Wholesale narrowband and broadband wireline access (e.g. Local loop unbundling, wholesale line rental, bit stream over copper or fibre) and shared narrowband and broadband wireless access;
 - c) Wholesale narrowband and broadband wireline access services for organisations provided over fibre to the premises.
- 12.5.3 The purpose of requiring the provision of wholesale services is to ensure that all licensees that contribute to the USF may also benefit from the extension of coverage that it provides.
- 12.5.4 These wholesale services will be provided in a fair and non-discriminatory manner consistent with the Competition Rules.



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- 12.5.5 PTA will set the wholesale tariffs that will be applied to the Wholesale Services in the USF Contract Area in order to ensure that operators that provide retail services may make a reasonable profit. These wholesale tariffs would be set at levels prevalent in the remaining areas of Pakistan.
- 12.5.6 Any operator that provides services in a USF Contract Area will be required to do so under the tariff plan that it applies anywhere in Pakistan.
- 12.5.7 Any operator that provides services in a USF Contract Area will be required to provide services to the same overall quality as is available elsewhere in Pakistan. This quality obligation includes telecommunications services, customer services and billing services.
- 12.5.8 The Competition Rules will apply to Contract Areas. Under these Rules, a separate geographic market may be defined for a Contract Area if conditions in the Contract Area are sufficiently different from conditions elsewhere in Pakistan.

12.6 Rolling programme

- 12.6.1 The USF Company will maintain a rolling programme of USF projects. The programme will provide a prioritised list of projects in areas that require USF intervention (Contract Areas) and the anticipated dates when the Contract Areas will be tendered. The programme will be published annually and will cover the three subsequent years starting on or shortly after the date of publication. In this way, the sector will be able to anticipate tendering opportunities and will be given at least two years visibility of the USF programme. Each annual update will extend the rolling programme by a year, and specify any updates to the programme for the overlapping period.
- 12.6.2 The USF Company will implement the rolling programme following a consultation with stakeholders.

12.7 USF Contract Area

- 12.7.1 A USF Contract Area will have the following characteristics:
- a) It is currently an unserved or underserved populated area;
 - b) It is suffering Market Failure associated with the supply of telecommunications services and this Market Failure is likely to endure;
 - c) It is not within the roll out obligation of any licensee.
- 12.7.2 The USF Company will maintain a list of such areas and, accordingly, prioritize them in the rolling programme for subsequent tendering in a transparent and reasonable manner.

12.8 Market Failure

- 12.8.1 An area of the country that is experiencing Market Failure is one where a hypothetical telecommunications operator which is extending its footprint in order to provide the USF Services is unable to make a normal profit over a typical planning period, assuming reasonable projections of demand, incremental costs of extending the business, no common costs, and typical sector values for cost of capital and discount rate.
- 12.8.2 The estimate of the loss made by the hypothetical operator can be used in the determination of any maximum subsidy to be offered.



12.9 Services to be facilitated by the USF

12.9.1 USF contractors will also facilitate and provide access to services and applications particularly to enable expanded use of next generation telecom access by the people of underserved and unserved areas. These may include services relating to:

- e/m Government
- e/m Commerce
- e/m Banking
- e/m Payments
- e/m Health
- e/m Agriculture
- e/m Education/Learning
- Other ICT services (based on Federal Government IT Policy).

12.9.2 USF projects where so desired will include provisioning of these services in the scope of work for the relevant projects announced by the USF company.

12.10 Community broadband services

12.10.1 USF contractors will provide community broadband services in areas with low income to enable access to telecommunications and over the top services, including eGovernment services and applications that serve developmental needs, without the need to purchase handsets or other devices. This will ensure access to applications and services developed under this policy as well as similar applications that may be available from other sources.



13. NATIONAL ICT R&D FUND

The optimal use of the industry contributed ICT Research and Development fund can have a transformational impact for a broad range of sectors of Pakistani economy. The Policy is intended to provide a clear focus to the use of the Fund, aiming it to be used to develop ICT applications and creation of intellectual property that will be of developmental benefit to Pakistan. The intention is therefore to realign the priorities of the Fund to focus on an optimal number of areas where value may be created. The goal for the National ICT R&D Fund is therefore to enable:

An ICT sector, working within the international research and development community, which provides applications and relevant content to support Pakistan's socio economic developmental aims.

An ICT eco-system in Pakistan for the creation of valuable Intellectual Property in ICT, particularly in telecommunications, that may be exploited for the benefit of all sectors, contributing to socio-economic development.

13.1 Funding

13.1.1 The R&D Fund contribution will be limited to a maximum of 0.5% of a licensee's gross revenue minus inter-operator and related PTA/FAB mandated payments to the National ICT R&D Fund established with the Ministry of Information Technology.

13.1.2 The National ICT R&D Fund will be used for:

- a) The development and deployment of applications and relevant content associated with Government developmental goals and WSIS Action Lines to be delivered over telecommunications networks including via smart phones, tablets and through Telecentres;
- b) The development of Intellectual Property in ICT, particularly in telecommunications working in conjunction with the international research and development community. However, the ownership of Intellectual Property will lie with the National ICT R&D Fund Company.

13.1.3 The Fund will be utilized for demand and output driven research and development.

13.1.4 The Fund will at all times take into consideration that the eco-system, applications and content being developed will also be equally relevant for many other developing countries. Therefore, the Fund will coordinate with relevant organizations to fully promote and export applications, contents and Intellectual Property created through R&D funding.

13.1.5 Application development, content development and the development of intellectual property will normally utilize Pakistani private sector resources in order to grow and develop the local ICT sector.

13.1.6 The Fund will facilitate promotion of ICT start-ups, incubators, technology acceleration programmes as well as Human Resource Development.

13.1.7 The Fund will also facilitate promotion of ICT events and conferences.



13.2 Applications associated with Government developmental goals and WSIS Capacity Building Action Lines

13.2.1 Applications associated with Government goals in sync with WSIS Action Lines will include but not be limited to:

- a) e/m Government
- b) e/m Commerce
- c) e/m Banking
- d) e/m Payments
- e) e/m Health
- f) e/m Agriculture
- g) e/m Education/Learning

13.3 Content development

13.3.1 Structured formal cloud sourcing of useful content and application development to young creative content/app creators will also be considered by the relevant agencies and the National ICT R&D Fund Company to enable self employment among the youth.

13.4 Development of Intellectual Property in ICT

13.4.1 The National ICT R&D Fund will coordinate market research, solicit applications and also consider unsolicited application for services in the ICT areas including those listed in Para 13.2.1. The Fund will develop, maintain and implement a rolling three year plan specifying the projects to be let and the outcomes expected.

13.4.2 Projects covering applied research in ICT, market research, product specification, product development may also be funded from the National ICT R&D Fund.

13.4.3 The Fund will establish links with international centres of expertise in the application areas listed in Paragraph 13.2.1 and those concerned with telecommunications infrastructure and services. The Fund will explore methods and coordinate joint working with development organisations in Pakistan and such international centres of expertise on particular projects.

13.4.4 The Fund will establish links with multilateral development partners to keep in sync with trends in international research arena and to establish joint funding of particular development/innovation projects.

13.4.5 The consequences of such activity will be the development of intellectual property in ICT. In return for funding of the development of this intellectual property, the Fund will take an agreed share of the intellectual property produced.

13.5 Rolling R&D funding programme

13.5.1 The National ICT R&D Fund Company will maintain a rolling programme of projects. The programme will include projects to be funded, projects under execution and projects to be completed during the plan period.



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- 13.5.2 The programme will be published annually and will cover the three subsequent years starting on or shortly after the date of publication. In this way, interested parties will be able to anticipate tendering opportunities and will be given at least two years' visibility of the programme. Each annual update will extend the rolling programme by a year, and specify any updates to the programme for the overlapping period.
- 13.5.3 The National ICT R&D Fund Company will implement the rolling programme.
- 13.5.4 The National ICT R&D Fund Company, will as part of its rolling programme, report on the outcome/impact of each project on completion when publishing the programme.
- 13.5.5 The National ICT R&D Fund will also facilitate skill development in the telecommunications sector.



14. SATELLITE TELECOMMUNICATIONS

Communication satellite systems have a unique capability to deliver telecommunication services nationally and internationally, providing social and economic benefits. The ability to deliver high quality communications services, economically to remote areas that are difficult to serve by terrestrial means, makes satellite communications an essential supplementary part of Pakistan's national telecommunications infrastructure. Communication satellite systems enable rural access to telecommunication services including voice and broadband, critical telecommunication services for disaster relief operations, socially beneficial e/m-services including e/m-learning and e/m-health, and the efficient provision of broadcast services over wide geographic areas.

Satellite communications is by its nature a global sector. It is the aim of the Federal Government (MoIT) to operate a balanced and transparent telecommunication market that also includes service provision via communication satellites which encourages local and foreign investment to deliver world class satellite communications for use by the citizens, businesses and government.

This section of the telecommunication policy is concerned only with the development, use and administration of satellite based telecommunication services in Pakistan.

This section of the policy relates to:

- Promotion of the use of satellite based telecommunication services in accordance with the relevant ITU guidelines, procedures and Radio Regulations;
- Regulations for the establishment, operation and provision of satellite services, inclusive of satellite earth stations.
- Protection against harmful interference.

In doing so, the goal of policy is to provide for a sound regulatory structure for Satellite Telecommunications which fosters;

A 'balanced' approach to encourage local and foreign investment, deployment and use of Fixed, Broadcast and Mobile Satellite Services.

14.1 Definitions

14.1.1 The Satellite Services covered by this Policy are as defined in the Radio Regulations published by the International Telecommunications Union (ITU):

- Fixed-Satellite Service (FSS): A radio-communication service between earth stations at given positions, when one or more satellites are used; the given position may be a specified fixed point or any fixed point within specified areas; in some cases this service includes satellite-to satellite links, which may also be operated in the inter-satellite service; the fixed-satellite service may also include feeder links for other space radio-communication services.
- Mobile-Satellite Service (MSS): A radio-communication service between mobile earth stations and one or more space stations, or between space stations used by this service; or between mobile earth stations by means of one or more space stations. This service may also include feeder links necessary for its operation.
- Broadcasting-Satellite Service (BSS): A radio-communication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public.



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- 14.1.2 An “earth station” is defined by the ITU as a station located either on the Earth’s surface or within the major portion of the earth’s atmosphere and intended for communication with one or more space stations; or with one or more stations of the same kind by means of one or more reflecting satellites or other objects in space.
- 14.1.3 In this Policy, the term “Earth Station” is to be distinguished from the term “Gateway Earth Station”. The term “Gateway Earth Station” is used for an earth station that acts as a gateway to a public network. Any earth station used for access is termed as a Terminal Earth Station.

14.2 Satellite service provision

- 14.2.1 Satellite based telecommunication services can be provided by any foreign or domestic satellite operator through a satellite service provider duly licensed by PTA.
- 14.2.2 A satellite service provider is an entity that provides satellite based telecommunication services.
- 14.2.3 The satellite service provider will satisfy the licensing requirements specified by PTA for the provision of such services before providing the same to its customers.
- 14.2.4 The satellite service provider will not be required to establish a local gateway to provide telecommunication access service within the geographic bounds of Pakistan by satellite unless adequate lawful interception cannot otherwise be established subject to any specific requirements.
- 14.2.5 Satellite based telecommunication services will not include DTH distribution service.

14.3 Access to electromagnetic spectrum

- 14.3.1 Access to spectrum and associated orbital resources for satellite services will be managed by FAB in accordance with the applicable ITU-R Radio Regulations, Recommendations and Pakistan Table of Frequency Allocations while keeping in view the protection of existing services/ users to the extent possible with minimum chances of harmful interference.

14.4 Access to space segment capacity

- 14.4.1 Radio transmissions from earth stations have the potential to cause harmful interference to communication satellite systems. The Government of Pakistan has obligations under international ITU Radio Regulations to avoid causing such harmful interference.
- 14.4.2 Satellite terminal equipment must conform to the relevant ITU guidelines and recommendations.
- 14.4.3 Satellite service providers will be required to register their Earth Stations with PTA prior to installation.
- 14.4.4 All relevant technical details of earth stations will be shared with PTA. The same information will be used by FAB for interference mitigation, if reported by foreign or the national satellite operators.



14.5 Satellite based telecommunication service licensing and general provisions

- 14.5.1 The present rights and obligations specified in the LDI, LL and infrastructure licenses associated with the installation and use of satellite networks will continue to apply.
- 14.5.2 Local entities that currently operate without any of the above mentioned licenses or in future intend to market bandwidth or services of satellite to corporate or other customers may do so after acquiring a satellite services class license. This category of CVAS will be duly introduced by PTA in pursuance to this policy. USF contribution provisions will also be applied to such licensees in line with other licensees eligible to provide such services. Licensees will be required to register the VSAT network with PTA.
- 14.5.3 VSAT or other Terminal Earth Station may be used to provide fixed access to public telecommunication networks as per following framework:
- 14.5.3.1 Any LL licensee may use VSAT, etc. services in such a manner under its license having first registered the service with PTA in accordance with their license.
- 14.5.3.2 A class licensee may use VSAT, etc. services in such a manner through satellite service provider to provide narrowband and broadband access. The holder of a license that allows the provision of a public telephony service may use VSAT, etc. services in such a manner as to provide such public telephony services.
- 14.5.3.3 Licensees that use VSAT, etc. services to provide fixed access to public telecommunication networks will be required to use an LDI licensee for the provision of national and international transit services.
- 14.5.4 VSAT services are used to provide point to point transmission nationally or internationally:
- 14.5.4.1 Any LDI, Infrastructure or CVAS licensee may use VSAT services in such a manner under its license having first registered this use with PTA.
- 14.5.4.2 An LL licensee may use VSAT, etc. services in this manner within its geographic area having first registered this use with PTA.
- 14.5.5 Mobile Satellite Services
- 14.5.5.1 Except where noted below, the operation of a terminal in a Mobile Satellite Service will require authorisation from the PTA. Satellite terminals that operate in Mobile Satellite service must conform to relevant technical standards which will be specified and made available on the PTA website.
- 14.5.6 General licensing provisions for GMPCS
- 14.5.6.1 The use of mobile terminals for Global Mobile Personal Communications by Satellite (GMPCS) will not require a specific end user license where the service is provided either by a local service provider or on a roaming basis by 'recognised' providers of GMPCS Services. For the purposes of this policy a 'recognised' provider will be one that is registered with PTA.



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14.5.6.2 The local service provider will need to obtain a class license in the category to be set up by PTA for the provision of GMPCS services, unless it holds a mobile license. A mobile operator will inform PTA on the introduction of a GMPCS service. Whether the local service provider is providing services using a domestic satellite network or one owned by a foreign entity, it will be a provision of the class license that information concerning traffic originating in, or routed to, Pakistan are made available to PTA and that provision of lawful interception of such traffic will be mandatory.

14.5.7 Roaming GMPCS terminals

14.5.7.1 Use of GMPCS terminals on a roaming basis is subject to provisions being in place with the respective GMPCS operators to provide data concerning traffic originating in, or routed to, Pakistan. A list of such 'recognised' operators will be made available on the PTA website. The PTA website will provide guidance for GMPCS operators to ensure they are included on this list.

14.5.7.2 Prior to entering Pakistan it will be the responsibility of the individual user of the GMPCS terminal to register their intent to bring a GMPCS terminal into the country. A web based registration process will be established by the PTA to facilitate this. Where a GMPCS operator is not included on the list of 'recognised' operators the use of a GMPCS terminal will not be permitted.

14.5.7.3 Unregistered GMPCS operators shall not be authorized to bring GMPCS terminals in the country.

14.5.8 Aeronautical Terminals

14.5.8.1 Aeronautical terminals will require a license/NOC from the PTA for operation while in Pakistan's Airspace. The license/NOC will set out the conditions of use for the Aeronautical Terminal.

14.5.9 Earth Stations on Vessels (ESV)

14.5.9.1 Earth Stations on Pakistan registered vessels operate under the regulations set out by the ITU or other recognized international standards body. NOC with appropriate conditions, issued by the PTA, will be required for the use of terminals on foreign registered vessels within the territorial waters of Pakistan.

14.5.9.2 Where an ESV operator is required to coordinate the use of the terminal with Pakistan, as determined under the relevant sections of the ITU-R Radio Regulations or other recognized international standards body, FAB will be the point of contact.

14.5.10 PTA will develop and publish processes and requirements relating to registration and granting permission for the use of equipment and services, and licensing of satellite based telecommunication services.

14.6 Satellite service and Satellite system spectrum fees

14.6.1 Satellite related spectrum fee will be calculated on an Administrative Cost Recovery Basis. The schedule of licensing fees will be published on the PTA website.



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- 14.6.2 PTA will review and update Satellite related spectrum fees periodically to ensure they are consistent with international best practice as well as the efficient and effective use of spectrum resources as required by this policy. PTA will consult with stakeholders before significant changes to the license fee arrangements are made.

14.7 Satellite terminal equipment standards;

- 14.7.1 To protect adjacent satellites and terrestrial services, satellite terminal equipment used in earth stations will be regulated by technical standards published by PTA. A technical standard will prescribe the minimum technical requirements to be fulfilled by the satellite terminal equipment intended for sale and use in Pakistan. These requirements will conform to the relevant requirements published by the ITU or other recognized international standards body for satellite earth stations and to the extent possible will be based on existing international equipment standards.

14.8 Installation standards

- 14.8.1 The operator of an Earth Station or Terminal will be responsible for ensuring that the installation adheres to international best practices to avoid interference with other services and appropriate health and safety standards.

14.9 Publicly available information

- 14.9.1 Information relating to the operation of satellite systems, licensing processes, charging mechanisms, standards, complaints procedures and public consultations will be made available publicly through the PTA website.



15. PUBLIC SECTOR SERVICE PROVIDERS

15.1 NTC

15.1.1 The efficiency of the NTC will be improved through activation of full range of services mandated under the Act both through indigenous investment by NTC and/or through the establishment of partnerships with the private sector to the benefit of both Government users and the private sector. These partnerships will enable the economies of scale necessary for efficient operation and sustainability of the NTC and may be realised for example by:

- Outsourcing of an enhanced version of the NTC service portfolio
- Public private partnership whereby the resources of one or more operators would be used in partnership with NTC
- NTC procuring services to deliver its service portfolio.
- Provision of a full range of services as mandated by the Act to NTC, to all levels of government institutions as well as officials.

15.1.2 Appropriate amendments in the Act may be introduced to ensure information security of NTC designated subscribers, enable sustainability and protection of GoP investments in NTC network specifically through exclusive provision of secure reliable communications to NTC designated subscribers through NTC.

15.2 Special Communications Organisation

15.2.1 The Special Communications Organisation (SCO) will continue to develop, maintain and operate telecom systems, infrastructure and services within Azad Jammu & Kashmir, Gilgit-Baltistan.

15.3 Broadband provisioning in public buildings

15.3.1 Facilities that enable broadband communications for use by the public sector building occupiers will be installed in new buildings built by the state, municipalities and government enterprises to enable maximum consumption of ICT services in the public sector.

15.4 Local manufacturing

15.4.1 Federal Government (MoIT) will assess the feasibility of domestic production of telecommunications equipment with specific focus on national assets and other strengths that can be exploited. The assessment will determine the area in the supply chain of equipment manufacturing where Pakistan should operate and whether and how it should cooperate with existing equipment manufacturers. A comprehensive incentive package for attracting joint ventures, Public Private Partnerships and direct investment into this important area will be developed and release after collaborative work of MoIT, Ministry of Finance, Ministry of Industries and other stakeholders.



16. CONVERGENCE BETWEEN TELECOMMUNICATION, IT AND BROADCAST MEDIA SECTORS

- 16.1 Not only has there been rapid change in communications technologies in the past decade but more importantly the technological developments have enabled delivery of diverse services, belonging to the domains of telecommunication, media and IT services, over a single digital platform. This phenomenon of “convergence” and its management and regulation has been one of the biggest and most interesting policy challenges.
- 16.2 While there are significant gains that can be leveraged from establishment of single regulatory structure and consolidated institution for managing the development of telecommunication and broadcast media sectors, there are several factors that need to be taken into account before such radical cross-sectoral restructuring is attempted in Pakistan. Requirements that especially need to be factored in the context of Pakistan is to evolve policy and regulatory frameworks from their legacy structures for discrete media, telecommunication and IT services rather than abrupt adoption of models developed in the context of either developed world or for nations with radically different demographics.
- 16.3 Longer term treatment of convergence phenomenon needs to be based on extensive cross organizational studies based on legislative, socio-cultural and market considerations. There is also, however, a need for immediate handling of some convergence issues and setting stage for the longer term scenario through phased short term measures. Some new services especially those delivered over broadband platforms fall within the remit of more than one regulator, creating a risk of excessive and/or inconsistent regulation. Where an identical service is transmitted over different delivery systems, it may be subject to different regulatory regimes. The development of new services, and their wide availability, must not be jeopardised by such regulatory overlaps and anomalies.
- 16.4 In view of above mentioned reasoning, following measures define the evolutionary treatment of convergence phenomenon in Pakistan:
- 16.4.1 In the short term the current regulatory structures for the electronic media and telecommunication will be kept under respective legislations for the two sectors. PTA and PEMRA will develop a well structured coordination mechanism with greater amount of linkages to bridge regulatory gaps. Most common services and corresponding delivery platforms will be identified and efficient and fast track licensing of common services, e.g. TV distribution over telecommunication networks by PEMRA and broadband access over media distribution networks by PTA, will be worked out.
- 16.4.2 For setting up a longer term model, extensive study will be carried out jointly by PTA and PEMRA for conditioning the regulatory institutions and relevant markets and the ultimate adoption of horizontal model of regulation based on integration of the regulatory bodies for telecommunication and media onto one cohesive organization. The studies will also identify the requirement of legislative changes in Laws governing the two sectors and roadmap for promulgation of this new legislative structure.
- 16.4.3 The prerequisite studies and sector conditioning will be carried out on the same time line as the review of telecommunication licensing regime mentioned in section 6.2 (Licensing framework) so that possibilities relevant to convergence can be factored in the new licensing framework for telecommunication sector.



17. POLICY REVIEW AND IMPLEMENTATION

- 17.1 Government may comprehensively review this policy after five years, depending on market and other developments. Midstream policy requirements will continue to be addressed through appropriate policy directives under Section 8 of the Telecom Act.
- 17.2 Effective implementation of this policy will require substantial amount of continuous work on part of the Federal Government (MoIT) as well as the PTA to develop/update appropriate frameworks and regulatory instruments. Strengthening resource allocation and capacity building within the Ministry of IT as well as the PTA is imperative to ensure the effective discharge of organizational responsibilities reiterated/introduced by this policy. In this regard following broad measures will be undertaken:
- 17.2.1 The Authority after release of this policy will review the requirements of strengthening its structure , enhance existing capacity and to introduce new bureaus as mandated by the Act to discharge the requirements.
- 17.2.2 To cater to the ongoing and continuous requirement of policy research, review/ adjustments and to ensure due/effective implementation, an appropriate structure will be put in place at MoIT. This structure will be based on requirements of this policy for engagement and retention of human resource with well structured job assignments, relevant KPIs and appropriate tenures.



Glossary

3G: Third generation mobile telecommunications technology, following International Mobile Telecommunications-2000 specifications from ITU. 3G supports Internet access, video calls and mobile TV as well as telephony

4G: Fourth generation mobile telecommunications technology, following International Mobile Telecommunications-2000 specifications from ITU. 4G provides ultrafast broadband access

Access (as an element in a telecommunications network): Transmission from the final distribution point before the CPE to the CPE

Access (regulatory use): Access to a network or service element provided by a network or service provider to another service provider

ACR: Administrative Cost Recovery

AIP: Administrative Incentive Pricing

Allocation (spectrum): The specification of the services to which a particular spectrum band may be put

Assignment (spectrum): The assignment of a specified quantity of spectrum to an individual licensee including technical characteristics of specified spectrum

Backhaul: Transmission from the content source to final distribution point before the CPE

Bit stream service: often used to mean wholesale DSL. A wholesale broadband service that provides broadband transmission over an access element (copper, fibre or in principle, wireless) of a telecommunications network. To provide a connection to a service provider's services, the bit stream service must be used in conjunction with a suitable backhaul service.

Broadband: Electronic information access at high speed

CEIR: Central Equipment Identity Register; a register that lists reported IMEIs and can be used to identify stolen or cloned mobile terminal devices

Content: Information in an electronic format, for example - Websites, TV channels, data, voice etc.

CPE: Customer Premises Equipment. Any piece of equipment that allows the user to convert the sent electronic information into a format that is acceptable by his display unit such as a PC, TV

DTH: Direct To Home. A link that allows the receiving of broadcast TV channels over Satellite

Economic pricing: pricing established through economic principles

Government, eCommerce, eLearning, eHealth: The use of the Internet to provided services to support specific functions

Exchange: Point of Presence of the telephone operator company that allows connectivity and switching between telephone users locally and internationally. In next generation networks, the local exchange is often replaced by concentrators with switching done elsewhere. The local exchange building then provides space for content caching and other functions that are best undertaken near the user, and to provide colocation space for third party service providers

FAB: Frequency Allocation Board. FAB is the statutory body constituted under Section 42 of the Pakistan Telecom Act 1996 to allocate portions of frequency spectrum to different users.

GDP: Gross Domestic Product. A measure of the economic standing of a country



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ICT: Information and Communication Technologies; universally understood to represent services that are based on a combination of computer and telecommunication networks technologies

IMEI: International Mobile Station Equipment Identity. A unique reference number used to identify mobile devices

Incumbent: The telecommunications company that owns majority of the telecommunications network in a country – PTCL in context of Pakistan

IP: Internet Protocol. Standard procedures that allow transmission of communication packets between Internet PoPs

ISP: Internet Service Provider. A company that owns Internet based infrastructure (Routers, Servers) and provides Internet access to users

ITU: International Telecommunication Union. A UN based world body for setting and approving technologies and standards for Telecommunications

ITU-R: Division of ITU responsible for Radio Standards

LDI License: Long Distance and International License, allows holder to offer communication between domestic cities and international countries

LL License: Local Loop License, allows holder to offer communication between the users within a city/town/village

Local Loop: The physical communication link between the telephone user and the telephone exchange

LTE: Long term evolution. LTE is a standard for the wireless communication of high-speed data for mobile phones and broadband wireless

MoIT: Ministry of Information Technology and Telecom, Pakistan

NDMA: National Disaster Management Authority

Next Generation Network (NGN): A telecommunications network based on packet switching (as opposed to the traditional circuit switching). In an NGN, end user services, including telephony services, are delivered over the top of the packet switched network from service nodes

Next Generation Access (NGA): Deployment of fibre cables in the local loop to replace copper cables, allowing the delivery of higher speed broadband service associated with an NGN

NTC: National Telecommunications Corporation

OTT: Over-the-top. OTT designates the carriage of telecom services, such as voice telephony, on top of a general purpose communication path, such as the Internet

Peering: An interconnected communication network that allows two or more operators to be connected in such an efficient way so as to achieve economies of scale and minimize their intercommunication routes and costs

PEMRA: Pakistan Electronic Media Regulatory Authority. Regulator for electronic media services in Pakistan

PSEB: Pakistan Software Export Board

PSTN: Public Switched Telephone Network. The conventional fixed line telephone network

PTA: Pakistan Telecommunications Authority. The telecommunications regulator in Pakistan

PTCL: Pakistan Telecommunications Company Ltd. The largest telecommunications infrastructure and service provider in Pakistan



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QoS: Quality of Service

R&D: Research and Development

SCO: Special Communications Organisation

Teledensity: A measure of the penetration of telephone lines in a country. Usually expressed as a % of the population or households that have access to telecom services

UN: United Nations

USF: Universal Service Fund

VoIP: Voice over Internet Protocol. Carriage of voice signals using Internet techniques. With VoIP, analogue speech is encoded into standard format Internet packets.

Wi-Fi: Wireless Fidelity. Technology corresponding to the IEEE802.11 standards for low power, indoor wireless data communication

WLL: Wireless Local Loop

WRC: World Radio Conference, the ITU-R conferences used to determined international coordination of the use of radio spectrum

WSIS: World Summit on Information Society