TRENDS IN UNIVERSAL ACCESS AND SERVICE POLICIES: CHANGING POLICIES TO ACCOMMODATE COMPETITION AND CONVERGENCE [1]

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SECTION 1: INTRODUCTION

In the past, and particularly before the 1980's, the supply of telecommunications services was mainly seen as a public service, alongside other services such as water and electricity. Government controlled all such resources and sought to offer public services to people throughout the country. Since telecommunications was seen as a public service offered by government or through government intervention, policy-makers believed that a public monopoly operator would be in the best position to build telecommunication networks effectively () and that only such operators could make services available to citizens at equitable prices without siphoning off undue profits. Monopoly operators were expected to meet targets set for them, in exchange for certain benefits such as granting of periods in which they could enjoy exclusivity in the market. In most countries, the monopolistic operator was basically a state-owned enterprise, although a few countries did opt for a system of issuing licenses to private and/or state monopolies on a territorial or functional basis.

This model worked particularly well for many years in the more developed economies, where long-distance and international tariffs, which had stayed high despite technological changes, were decreasing in cost as opposed to the initial phases of their exploitation, thus enabling the development of the networks and of tele-density and the sector-specific industrial development. In these markets, cross-subsidization by monopoly undertakings generally ensured the availability of basic services, in particular connection to the fixed network and local calls.

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In the less developed countries, the scenario of cross-subsidization worked less well and incumbent operators had difficulties in providing both basic and new services and in keeping up with technological changes. Although financial resources were obtained in some cases from multilateral lending or donor agencies or from bilateral government or other government-sponsored sources, this trend was not to last, thus creating the need for different method of service offering so as to provide at least some basic service to the majority of citizens..

Since the 1980's, technological advances, the perceived need to further lower tariffs to bring tariffs in line with costs, the desire to increase the range of services available to the consumers and the desire to expand businesses based on viable communications infrastructure were among the factors that started to undermine "traditional" thinking about the telecommunications sector and the funding of access to telecommunications services. Governments were faced with a situation where they had a social obligation of ensuring access to basic telecommunications to their respective populations but their power to impose such obligations on incumbents was becoming slimmer and slimmer.

It is commonly accepted that in many ways the liberalization of telecommunications markets and the introduction of convergence friendly policies, if properly implemented, has generally increased efficiency, increased the number of people who receive services, lowered prices, and improved the choice and quality of services provided. However, even in open competition environments which are properly regulated, ensuring universal access and/or service remains a challenge. Within this context, specific policy and regulatory measures as well as financing mechanisms have been introduced in many countries around the world to achieve universal access and/or service and safeguard the concept of reasonable access for citizens at an affordable price — in the light of national conditions — irrespective of income levels and geographic location

Thus, for example, with the emergence of competitive service providers and multiple technologies for the provision of telephone services, changes were introduced in universal access and universal service policies. Regulators began to introduce explicit subsidies for higher-cost services or services in remote or rural areas. These programs required a substantial level of direct, detailed regulatory intervention. Regulators now had to decide which operators or service providers had to contribute to universal service funds, how much subsidy funding should be collected and disbursed, what services should be subsidized, and which entities should receive the subsidies.

In addition, while it has been demonstrated that market forces, after liberalization and sector reform, have had the greatest impact on improvement of universal access (UA) and universal service (US) in many countries, for various reasons market gaps remained in place because of exceptionally challenging geographic characteristics combined with extremely low population densities or isolation (e.g., many islands) or extreme poverty. In other countries, markets might be able to achieve universal access (UA) or even universal service (US), but the timeframe in which this could be obtained, might be considered too long.

There is a clear need, in view of significant competitive, technological and service changes taking place in the telecommunications sector, to review traditional universal service obligations, their coverage, how they are financed and who is responsible for providing them. Indeed, universality has been achieved (to a greater or lesser extent) though a number of mechanisms,

including market reform, the imposition of universal service obligations on certain or all market players, the designation of universal service providers, the financing of universal service obligations, the creation of Universal Service Funds, as well as through innovative measures such as public-private partnerships, business-NGO partnerships, etc. Although in some cases the creation of a Universal Service Fund has been seen as one of the key requirements to achieve universal access and/or service, the sole use of such Funds is increasingly being questioned, with policy-makers realizing that there are a series of elements to be taken into consideration when considering universality issues.

SECTION 2: KEY ELEMENTS TO ACHIEVE AND MANAGE UNIVERSAL ACCESS AND/OR SERVICE

Key elements to achieve an effective framework to address universality include: defining the institutional framework for the definition and implementation of Universal Access or Service (UAS) policy and regulation; defining the scope of universal service and access, thereby ensuring that the services are available, accessible and that the price of communications is affordable; defining innovative mechanisms, including further regulatory reform, public-private partnership mechanisms, etc. to achieve UA; and, identifying financing mechanisms and selecting appropriate funding mechanism for universal access and/or service (which, as stated above, should not be limited to the creation of a Universal Service Fund).

2.1 Institutional Framework

Key questions to be addressed in relation to the institutional framework are

- *Is there a law/legal mandate to support or address the concept of Universal Access/Service (UAS)?*
- *Does the law/legal mandate direct the ministry or the regulator to develop a Universal Access/Service policy? Is the mandate clear?*
- *Is the regulator responsible for the implementation of the policy?*

Achieving universal access/service to communications is a challenge for all countries. In order to ensure that universal access/service policy is a central part of the ICT framework and not construed as simply a form of corporate social responsibility, or an act of 'goodwill' by investors in the ICT sector, it is important that:

- universal access/service polices are properly formulated
- universal access/service polices are given a proper space in the national policy and legislative frameworks as well as in the institutional framework for telecommunications regulation.

Universal access/service policy and its institutional framework should therefore be captured in national legislation, regulations, licenses or Ministerial policy statements (preferably a combination of all these instruments), which establish the framework and limitations within which the policy must be implemented. Such a foundation is necessary to ensure the credibility,

authority and enforceability of the policy, as well as to ensure that its terms are consistent with other national priorities and ongoing programs.

Within this context, it is also essential to ensure that the mandate of actors is clear so that they can effectively define the principle stages of a universal service and access policy, including: planning, implementation and evaluation as well as specific policy objectives for UAS and regulatory measures in ICT Policy statements. Such a mandate must be set out as clearly as possible, preferably in the law.

That being said, there is no one solution to creating an "appropriate" institutional framework for universal access/service. Universal access/service policy may be implemented by the country's National Regulatory Authority (NRA), the ministry responsible for telecommunications and ICT, or an independent agency established to manage and administer universal access and service or even just the Fund.

In a number of countries, the ministry responsible for communications implements policy relating to universal access or service. This is, for example, the case in Colombia, Guatemala, and India. The advantage of such an approach is that the entity which defines policy also carries it out. The main disadvantage is that since such policies sometimes include special financing instruments such as a specific Universal Service Fund, which in many countries is mainly built up out of contributions from industry (which in some cases has little say in determining the level of contribution or indeed in the allocation of funds to projects), government is not perceived as being far enough removed to be an independent administrator of the finances. This is even more acutely felt where government still has any ownership interest in the industry.

In other countries, it is the National Regulatory Authority which implements universal access and/or service policies. Many recognize this as a more optimal and independent solution. Indeed, the 2005 WATRA Guidelines on Universal Access/Service state that: " National Regulatory Authority's (NRAs) must be established and capacitated to play a key role in implementing universal access policies first through addressing the market efficiency gap (letting the market deliver universal access/service), and second through the true access gap. NRAs should be responsible for implementing policies directed towards assuring the best quality reliable services at the most affordable prices that meet the needs of consumers—existing and future.[2]"

In Uganda, the 1997 Uganda Communications Act notes that the functions of the Uganda Communications Commission (UCC) will include enhancing the coverage of communications services and products in the country and expanding access to communications services in Uganda for all citizens[3]. In March 2005, the UCC issued Communications (Universal Service) Regulations outlining a comprehensive universal service policy for Uganda[4]. These Regulations:

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[2] West African Common Market Project: Harmonization of Policies Governing the ICT Market in the UEMOA-ECOWAS Space, Final Guidelines on Universal Access and Service adopted by the 3rd WATRA OGM, 9 September 2005, Guideline 1.2, available at: http://www.itu.int/ITU-D/treg/projects/itu-ec/Ghana/modules/Compil-Guidelines_final.pdf

[3] Uganda Communications Act, 1997, Section 4, available at: http://www.ucc.co.ug/ucaCap106LawsOfUganda.pdf

[4] Communications (Universal Service) Regulations, 2005, available at: http://www.ucc.co.ug/regulate.php

- ensure that the UCC has ample authority to specify and define universal service obligations for operators as well as to address services covered, that it can develop a suitable funding mechanism to support universal service, and that it has an appropriate enforcement authority
- identify the need to monitor delivery of universal service over time and review services captured in the universal service obligation, and to reassess coverage of services if need be;
- direct the UCC to establish a universal service fund to operate in concert with the already existing Rural Communications Development Fund (RCDF) which was established in 1997 by the Uganda Communications Act
- direct the UCC to both monitor and enforce the ability of the operators to carry out their universal service plans, as well as prescribing supply time and quality of service performance measurements intended to evaluate fulfillment of the universal service obligation

Having the NRA responsible for the implementation of UAS is generally seen to be a sound approach for many countries because:

- The regulator typically has the required industry sector expertise, and skilled technical, economic and financial staff;
- The regulator has a degree of independence and is perceived to be one step removed from politics; and

Once basic measures have been defined and implemented in the telecommunication sector, including opening the sector up to competition and establishing an independent regulatory agency, it is also the responsibility of policy-makers to monitor their implementation by conducting reviews at regular intervals and making any adjustments that may be needed. This is because a universal service and access strategy needs to be reviewed and fine-tuned from time to time in the light of social, commercial and technological developments, if it is to be effective.

2.2 Definition of Universal Access and Service

Key questions to be addressed in relation to the definition of Universal Access and/or Service are

- *If a law/legal mandate exists, is there a distinction drawn between universal service and universal access?*

As stated in the *Infodev* ICT Regulation Toolkit on Universal Access and Service[5], the terms *universal access* (UA) and *universal service* (US) are used in a wide variety of contexts to describe or demonstrate objectives and policies that governments implement to ensure that all

[5] *Infodev* ICT Regulation Toolkit, Module 4: Universal Access and Service, available at: http://www.ictregulationtoolkit.org/en/Section.3126.html

their citizens have access to the benefits of modern economic life. They refer to the ability of everyone, regardless of region or location, socio-economic status, ethnicity, gender, disability, or any other factor, to access services. The concepts are broadly promoted and widely accepted as the best expression of policies seeking to achieve equality and fairness of opportunity along with economic growth. Within this context, the key goal of a country's universal service/access policy is to develop the infrastructure and regulatory tools necessary to provide each member of its population with access to a point of communication.

In general, US refers to service at the individual or household level - typically a telephone in each home - whereas UA refers to a publicly shared level of service which is generally through public payphones or Internet telecentres. However, there is more to the definition of the terms than just the fact of providing a connection to every household as opposed to connectivity in every village. Indeed, the three main dimensions distinguishing Universal Access and Universal Service articulated by the ITU 2003 *Trends in Telecommunication Reform Report* are:

- **Availability**: The level of service is the same wherever a person lives or works, with no disadvantage stemming from geographic location. In particular, rural and urban distinctions do not affect a person's ability to access communication services. In the information age, the quality of services becomes even more important.
- **Affordability:** Everyone can afford service, and no one is disadvantaged by income level. Cost variations due to location, terrain or climate, which often dovetail with urban/rural factors, do not impact on one's access to ICT services. This dimension presents unique challenges with regard to addressing network expansion.
- **Accessibility:** People with disabilities can use the service; one's level of physical and mental ability does not affect access to communication services. In the information society, policy makers must look past physical accessibility and take into account the *relevance* of content and applications and the ability of users to understand it.

This has led to various definitions around the world. Under the EU Telecoms rules as set by the Universal Service Directive of 2002, for example, universal service is a safety net for achieving social inclusiveness. It ensures that basic communications services of good quality are always available at an affordable price, even if the market does not provide them under normal commercial conditions. This set of basic services, which are already available to the great majority of citizens and considered essential for participation in society, is called 'universal service'[6]. The Universal Service Directive defines universal service as *"minimum set of services, of specified quality to which all end-users have access, at an affordable price in the light of national conditions, without distorting competition".*

2.3 Scope and Enforcement of Universal Access/Service Obligations

Key questions to be addressed in relation to the scope and enforcement of Universal Access and/or Service obligations are

- *Are there key principles or goals for Universal Access/Service defined in the law or any other document (e.g., Government policy)?*

[6] Universal Service Directive, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0022:EN:HTML

- *Does the law define specific services that must be provided and to whom?*
- *Does the law provide that universal service targets are reviewed on a regular basis?*
- *Does the law provide that stakeholders are consulted regarding UAS targets?*
- *Are there specific criteria for determining which operators have or are subject to Universal Access/Service obligations?*
- *Do the obligations vary from operator to operator, such as a distinction drawn between dominant and non-dominant operators?*
- *If the operator fails to meet its Universal Access/Service obligations, or contribution requirements, what enforcement mechanisms are in place to address*

The definition of universal access/service and the scope of the obligations attached to the respective definitions will differ from one country to the next depending on the economic and social context and the political will to achieve universality in terms of means of communications.

There is no fixed or standard definition for the scope of universal access/service obligations – however, currently established universal service/access policies typically seek to meet the objectives stated above: availability, affordability and accessibility.[7] The range of the scope of UAS obligations is very broad because developed and developing countries face different market conditions and must meet different objectives in order to provide un served and underserved rural populations with universal service/access.

In most countries, the scope of universal access and service (UAS) includes the provision of basic telephony. However, the definition of the scope of UAS is evolving to include Internet connectivity and increasingly broadband as technology develops and countries come closer to reaching their goals for voice service availability. Radio and television broadcasting has traditionally not been included in the definition of the scope of UAS, but this is also changing rapidly due to developments such as convergence, Internet broadcasting and broadcasters also offering Internet and telephony services (e.g., cable TV operators). Broadcasting policies and regulation typically have coverage requirements, though without specifics about actual access, whether by public means or for private subscribers. For example: the definitions in ECOWAS-UEMOA vary with most countries referring to voice, but a few like Ghana have considered including a wider range of services to include voice, data transmission, Internet access, access to relevant local content and broadband, in the scope of "basic."

The scope of UAS is often specified in detail to ensure that it is fit for purpose. As mentioned above, it needs to be accessible and affordable as well as available. Features of UAS that might be specified include the following:

- Times of day when there is access to the service;
- Type of shelter for the terminals (e.g. secure building for a telecentre);
- Access to and usability of the terminal for people with physical disabilities;

[7] Rethinking Universal Service for a Next Generation Network Environment, Working Party on Telecommunication and Information Services Policies, OECD, April 2006, p. 10.

- Convenience and pleasantness of location for all target groups of users (e.g., women might not wish to enter a bar to use a service);
- Quality of service (network reliability, fault repair times and call quality for telephony and prescribed down and upstream data rates for the Internet service).
- Payment methods (e.g., cash or prepaid cards) and for prepaid cards, availability of sales outlets; and
- Personal support for using the services.

Other services that are entering UAS policies include:

- Directories and directory enquiry services;
- Support services for Internet subscribers (e.g. help-lines, training);
- Emergency call answering facilities (dispatch of help for emergencies); and
- Special facilities to permit use by people with disabilities on par with all other facilities.

Figure 1 below shows the universal service obligations for designated universal service providers in the European Union, Uganda and India and illustrates how universal service/access objectives vary from one country to another.

Figure 1

European Union	EU Member States must ensure the following: 1) Access at a fixed location upon request, to enable users to make and receive local, national and long distance calls, fax communications, and to enable them to have functional access; 2) At least one comprehensive directory and one comprehensive enquiry service comprising the numbers of all fixed and mobile subscribers who so wish; 3) Availability of public pay phones over the whole territory; 4) Measures that ensure that the disabled have access to the same services at an affordable price. 5) *(since 2005)* Required to supply connection that provides "functional" Internet access (FIA), which is limited to a single narrowband connection and does not extend to ISDN or broadband. 6) Must respond to all reasonable requests to install a telephone line, offering the same prices irrespective of location.

Uganda	(1) Ensure universal availability of connections by every person or individual households to public communication networks through inter alia pay phones, community telecentres, tele-boutiques, kiosks, cafes or community communications internet access terminals (2) Provide the following services: (i) connection to a fixed communication network able to support voice telephony, fax and data transmission,(ii) reasonable geographic access to public call boxes across Uganda, (iii) ability of consumers to access emergency and free services, operator assistance and directory inquiry services, (iv) ability to meet needs of people with disability,(v) delivery of affordable basic communication services to all customers on reasonable request, (vi) providing customers with disabilities with the same or equivalent services as all other customers so as to have access to the same level of universal service.
India	Stream I: Provision of Public Telecommunications and Information Services (a) Operate and maintain village public phones (VPT); (b) after target of one VPT per village achieved, provide additional public phone in villages of 2000+ without public call office; (c) replace multi access radio relay technology public phones; (d) upgrade public telephones to public tele-information centres; (e) install high speed public telecommunications information centres. Stream II: Provide household telephones in rural and remote areas as determined by central government

Sources: What Rules for Universal Service in an IP-enabled NGN Environment? Background Paper, International Telecommunication Union, April 2006, pp. 5-8.; The Communications (Universal Service) Regulations of Uganda, 2003, Section 6; and Universal Service Obligation Fund, Department of Telecommunications, Ministry of Communications & Information Technology of India at http:/www.dot.gov.in/uso/usoindex.htm.

These examples demonstrate that, despite the fact that countries have begun to adapt UAS obligation objectives to take advantage of the opportunities brought about by technological development (i.e., the Internet) and provide both voice and data communication services, most UAS obligation objectives still rely on the improvement and expansion of wireline networks to provide service and access to populations in unserved and underserved areas. Efforts to provide UAS through wireline networks have produced incremental results, but countries should consider the benefits that technologies - such as for example wireless technologies - can bring to telecommunications networks and to the fulfilment of universal service/access goals.

At present, technological change is challenging existing policies and forcing regulatory authorities to rethink the universal service obligations they impose on their carriers and establish a framework that will enable the government to carry out their universal service/access policies in a converging telecommunications sector.

2.4 Regulatory Reform and UAS

Key questions to be addressed in relation to regulatory reform and its role in addressing UAS include:

- *Does the law provide that build out requirements may be included in licenses to achieve UAS targets?*
- *Does the law provide that coverage obligations (in terms of population or geographic area covered or other) may be included in licenses to achieve UAS targets?*

Since markets have been opened to competition, policy makers and regulators have been using a variety of tools to achieve universal access or service. Good practice is that before using scarce public resources, governments and regulators exhaust available non-investment avenues to extend access. Often regulatory reform is one of the first steps in achieving universal access/service. This includes developing policies, regulations, and practices, including privatization design that goes beyond the more traditional framework of simply imposing obligations on designated universal service providers, which in most cases was the incumbent fixed-line operator. Such tools create incentives for the private sector to extend universal access to ICTs, as well as enacting enabling licensing and interconnection frameworks.

Establishing flexible spectrum policies as well as technology-neutral telecommunications policies that include a flexible and adaptable licensing regime can facilitate the entry and use of new and innovative technologies and provide a wider range of participants to achieve universal service/access goals. Revising universal service obligation objectives and implementing suitable mechanisms for the disbursement of universal service fund resources can also help in taking full advantage of multiple resources and technological development to better serve and benefit underserved and unserved populations.

Recently, new technologies have begun to provide unserved and underserved areas with faster service and more affordable access to communication. Mobile technologies are being used increasingly to provide rural and difficult to reach communities with fixed-wireless and mobile public payphones.[8] In many developing countries, mobile networks have become a substitute for fixed networks because (i) they can provide wider coverage, (ii) they can usually be easily and quickly deployed at a lower cost, (iii) their management and maintenance is simpler, and (iv) pricing schemes applied by mobile operators have made access to telephony service affordable for the urban poor.[9]

As third generation (IMT-2000 or 3G) wireless technologies are deployed around the world, they can offer both voice and data services at affordable costs and thus can provide even greater access to communications services. Third generation technologies, such as CDMA 2000 and WCDMA can support both voice and broadband wireless access, transmit large amounts of traffic in a small amount of spectrum, as well as provide wider coverage. CDMA operators in India (as a result of Unified Licences being introduced) have been able to build networks quickly and are offering low price plans in underserved areas.[10] In addition, operators in Brazil, China and the United States are using CDMA 2000 technology to expand and deploy Internet access across the country, including remote areas. In Peru, a clinic in the Andes is using 3G wireless voice and data equipment to communicate with medical professionals around the world to provide medical assistance to patients in this remote area of the country. The clinic, which had no connectivity of any kind until February 2006 and no fixed line communications, has been able

[8] Mobile Operators: Their Contribution to Universal Service and Public Access, January 2003, pp. 7.
[9] UMTS Forum Report "Benefits of Mobile Communications for Society", June 2004, Report No. 36.
[10] Opportunity for All: Using Wireless to Provide Universal Access to Telecom Services, pp. 2-6.

to treat over 3,000 residents in the area. In the same manner, EV-DO high-speed wireless technology is being used in the Democratic Republic of the Congo to access vital patient information quickly and to notify doctors in case of emergency.[11]

Other technologies such as Voice over Internet Protocol (VoIP), very small aperture terminals (VSAT), and broadband over power-line (or power-line communications) which are not as widely used at present, are also options that can provide connectivity inexpensively and effectively to rural areas, and can help countries achieve universal service/access. [12]

Given the importance of new technologies in reaching unserved and underserved rural populations, regulatory authorities are modifying their universal service/access policies by incorporating new technologies and relying on them to reach rural populations. Forward-looking telecommunications policies can foster the use of new and innovative technologies and can be instrumental in helping countries to achieve their universal service/access goals.

- ***Technology Neutrality***

A critical factor in establishing progressive policies for achieving universal service/access is technology neutrality. In other words, when establishing universal service/access policies, countries can maximise the opportunities for achieving their universal service/access goals by not limiting technological choice.[13] By avoiding traditional paradigms that rely only on wireline operators to achieve universality, countries can encourage the use and application of innovative technologies and foster a more competitive and dynamic market that can further support universal service obligation goals by introducing technology-neutral policies. In turn, such policies will be conducive to a universal/access policy that will better answer the needs and demands of a country's rural population.

- ***Licensing***

As telecommunications markets have liberalised, countries have moved away from restrictive individual licensing regimes, which can limit the scope of technologies and services that an operator can offer, to a variety of more progressive licensing options such as service or technology neutral licensing regimes. Unified (converged) licences, which can be described as a license that allows an operator to offer a panoply of services under one authorisation,[14] seem to be well-suited for countries trying to expand their telecommunications networks to reach as much of the population as possible. This type of regime opens the scope of technologies and services that can be offered by one operator and thus increases participation of new market entrants, encourages the introduction and use of new technologies, and also facilitates the process of obtaining a license. Countries such as India, Australia, individual member states of the European Union, Japan, Kenya, Malaysia, Mali, Mauritius, Singapore, Tanzania, and

[11] 3G Creating Digital Multimedia Access Opportunities Around the World, 3G CDMA Wireless Technologies Benefiting Society.
[12] A New Model for Rural Connectivity, Development Through Enterprise, Al Hammond and John Paul, May 2006.
[13] What Rules for Universal Service in a an IP-enabled NGN Environment? Background Paper, International Telecommunication Union, April 2006, p. 20.
[14] The Challenge of Creating Policy and Regulation in a Converged ICT Era, Ernest C. A. Ndukwe, Telecom World Africa Conference 2005, Capetown, South Africa, p. 7.

Uganda[15] have all introduced some form of converged licensing regime based on the characteristics and needs of their markets.

Regulators should follow a strategy of aggressive all-service licensing of operators willing to provide services in currently uncovered areas. In some countries, operators are expressing a preference for alternatives, such as accepting reasonable rural build-out targets in their licence, or negotiating ex-ante specific rural universal access and service (UAS) targets with the regulator in exchange for relief from UASF levies or taxes.

In establishing the framework necessary to provide universal service/access to rural populations, a country also should consider a licensing regime that will allow it the flexibility to take advantage of technological development and convergence. Build-out targets are increasingly used in licensing procedures as an important factor to evaluate applications alongside the bid price. Thus, for example, in Uganda, the Second National Operator's bid evaluation criteria included a network rollout plan in addition to the bid price. In India, the regional local fixed operator bid evaluation criteria gave weight to rural coverage plans, but only 15 percent compared to 72 percent weight of the amount of license fee offered.

Under these models, investment in the sector, rather than short-term fiscal benefits, is treated as a major or primary consideration—ensuring a higher rate of investment over the long run (Dyamond, Juntunen, and Navas-Sabater 2000). At the same time, licenses need to be designed carefully to ensure that the investments encouraged under the scheme will actually help meet access targets.

Brazil is an example of a country that, although it has developed a funding mechanism, generally achieves its universal objectives through coverage obligations imposed on its licensees. In fact, one could argue that Brazil's coverage obligations are more effective at achieving universal service goals than any of the special telecommunications development funds that have been created to fund or subsidize telecommunications projects. Because the Brazilian legal framework uses a variety of tools to achieve universal service, it took advantage of the new licenses being issued for third generation (3G) mobile services and imposed more expansive coverage obligations on those new 3G licensees than obligations previously imposed on mobile licensees. In so doing, Anatel recognized that imposing coverage obligations through licenses brings more immediate benefits to the population than other funding mechanisms. To this end, during the last tender for 3G mobile licenses, areas of low demand were not licensed in their own right, but were included as coverage obligations along with the more populous licenses.[16] For example, winners of the São Paulo metropolitan licenses (in the southeast of the country) are obligated to provide coverage in the northern states of Amazonas, Amapá, Pará, Maranhão and Roraima.

In addition, specific coverage obligations were also detailed in the licenses, according to the following chart:

[15] Licensing Approaches in an Era of Convergence, Global Symposium for Regulators, Geneva, Switzerland, 8-10 December, 2004.

[16] *Edital de Licitação* ("*Bidding Terms"*) No. 002/2007. The tender was concluded in Dec. 31, 2007 and the 3G licenses were signed and published on the Brazilian Official Gazette in Apr. 29, 2008.

Table 1 – 3G Licenses Coverage Obligations

Target	Threshold population	Coverage Obligations
I.	Without cellular service	Licensees will have the first 2 years to provide mobile services to 25% of the municipalities of each area acquired that still does not have cellular service.
II.	Less than 30,000	Licensees will provide 3G coverage to 15% of all municipalities within 5 years, and reach 60% coverage in all municipalities within 8 years.
III.	30,000 – 100,000	Licensees will provide 3G coverage to 50% of all municipalities within 5 years.
IV.	More than 100,000	Within 1 year, licensees must cover 50% of state capitals and municipalities with more than 500,000 inhabitants; within 2 years licensees must cover 100% of state capitals and municipalities with more 500,000 inhabitants; within 3 years, licensees must cover 50% of municipalities with more than 200,000 inhabitants; within 4 years, licensees must cover 100% of municipalities with more than 200,000 inhabitants; within 5 years, licensees must cover 100% of municipalities with more than 100,000 inhabitants.

Source: Anatel.

2.5 Multi-pronged Approach to achieving UAS

- ***Key questions to be addressed in relation to the introduction of a multi-pronged approach to achieving UAS:***
- *Does the law provide for a multi-pronged approach to addressing universal access/service challenges and opportunities?*
- *What complementary strategies to meet the objectives targets are set out? Do they include:*

a. micro-credit programmes;

b. 'build, operate and transfer' (BOT) or 'build, transfer and operate' (BTO) arrangements;

c. cooperatives and community-owned networks;

d. regional operators;

e. telecentres and multi-purpose community centres (MPCCs)?

Complementary strategies can be applied to ensure that objectives and targets are met through a mix of tools. As stated in the 2005 WATRA Guidelines: "Member States shall design universal access/service policies, regulations and practices in order to create incentives for the private sector to extend universal access to communications services." The Guidelines also provide that: " Member States shall use a multi-pronged approach to addressing universal access/service challenges and opportunities. That is, rely on complementary strategies to meet the objectives targets that have been set out."

The 2005 ITU West African Harmonization Report on Universal Access and Service Report[17] provides that:

"Over the years, given the economic case for universal access/service, there has been a shift towards seeing universal access and service schemes not as "burdens" but as opportunities from a commercial perspective. This policy choice, between setting mandates and providing incentives, is often captured in the term "pay or play." That is, an operator can either pay to support universal access/service or undertake to provide it itself. The strategy of incentivising operators to provide universal service does not diminish governments' role in addressing universal access/service. Governments retain the responsibility to set overall policies which will facilitate private-sector contributions to universal access/service.

A common approach of engaging operators and allowing them to "play" is to provide incentives for operators to provide telecommunications in less profitable areas. Such incentives could include purely commercial mechanisms (not necessarily directly related to the telecommunications sector and therefore requiring consultation with other government departments) aimed at targeting the operators' bottom line, such as tax concessions, removal of duties on telecommunication equipment targeted at rural and remote areas, or lifting of foreign exchange restrictions.

Other ways in which universal access/service may be promoted include:

- *micro-credit programmes;*
- *'build, operate and transfer' (BOT) or 'build, transfer and operate' (BTO) arrangements;*
- *cooperatives and community-owned networks;*
- *regional operators; and*
- *telecentres and multi-purpose community centres (MPCCs)."*

Bangladesh is a good example of a country where telecommunication access to most of the rural areas is mainly being provided not by government mandate but through Grameenphone's[18] Village Phone Program.[19]

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[17] Available at: http://www.itu.int/ITU-D/treg/projects/itu-ec/Ghana/modules/FinalDocuments/Universal_Service.pdf

[18] Grameenphone is a joint venture enterprise between Norway's Telenor (62%) and Grameen Telecom Corporation (38%), a not-for-profit subsidiary of Grameen Bank, a micro-credit pioneer and "internationally reputed bank for the poor". See http:// www.grameenphone.com/About Grameenphone/Shareholders.

[19] Grameenphone was founded by three visionaries: (1) Iqbal Quadir, Muhammad Yunus, founder of the Grameen Bank, and Khalid Shams. *See* Grameen Telecom's Village Phone Programme in Rural Bangladesh: A Multi-Media Case Study, Final Report, March 17, 2000, available at http://www.telecommons.com/villagephone/contents.html.

The Telecommunication Act 2001 does not provide for the regulator, the Bangladesh Telecommunications Regulatory Commission (BTRC) to establish a universal service project or universal service fund. However, it does provide the BTRC discretion to include a compulsory obligation in the operator's license requiring them to provide the licensed services to rural and sparsely populated areas, although not exceeding ten percent of the licensee's capacity.[20] No universal service fund has been established and there is no specific funding mechanism for providing universal service.[21] Currently, fixed line operators and mobile operators have obligations to provide universal access/service, which is generally done by providing 5 percent of their network capacity to rural areas.[22] The result is that telecommunication access to most of the rural areas is mainly being provided not by government mandate but through Grameenphone's Village Phone Program.

The National Telecommunications Policy of 1998 (NTP) states that it is the Bangladesh government's goal to "facilitate universal telephone service throughout the country, and where there is demand, all those value added services such as cellular mobile telephone, paging, data services, access to Internet (including electronic mail), voice mail and video conferencing". Universal service is defined to include services to both urban and rural areas of Bangladesh. Services included in Bangladesh's definition of universal service include both fixed line private residential service and individual mobile cellular services. Under the NTP, universal service obligations for basic telephone services are to be included in the licenses of all network operators.

The BTRC, which began operation January 31, 2002, had the following mission:

- Increase the teledensity to at least 10 telephones per 100 inhabitants by 2010;
- Establish a phone in every village by 2006;
- Promote ICT applications to support socio economic development;
- Create an enabling environment and customer choice for ICT services;
- Encourage joint Public-Private cooperation in ICT development; and
- Encourage ICT applications which stimulate poverty reduction.

The Village Phone Program, started in 1997, is the initiative of the Grameen Bank, an NGO with an extensive rural banking network and an expert in microfinance programs that assists poor villagers in rural areas by providing loans to them under a micro-credit program for rural income generating activities. To implement the Village Phone Program, the Grameen Bank created an independent not-for-profit subsidiary called Grameen Telecom, which then established a for-profit company, Grameenphone, to fund the Village Program in Bangladesh with the profits it earns as a nationwide cellular mobile telephone provider. Grameen Telecom administers the Village Phone Program with the help of Grameen Bank, trains the operators, supplies them with handsets and handles all service-related issues.[23]

The Village Phone Program is able to provide modern digital wireless service to rural areas through Grameenphone's GSM network in Bangladesh. The program provides loans to Grameen Bank members, who are most often female, to purchase a mobile phone under the

[20] Bangladesh Telecommunication Act of 2001, Chapter V, par. 37.
[21] *Id.*
[22] *Id.*
[23] Grameenphone website/About Grameenphone/Shareholders/Grameen Telecom Overview, at http://www.grameenphone.com.

lease-financing program of Grameen Bank. These villagers then become Village Phone operators and earn money by offering telephone service to other people in their village. Each Village Phone operator is responsible for providing telephone services (sending and receiving calls), collecting call charges according to prescribed rates, remitting payments to Grameen Bank, and ensuring proper maintenance of the telephone. The Village Phone operator's income results from the difference between charges paid by customers and the airtime charges billed to the operator by Grameen Telecom, as well as a flat charge for incoming calls. Grameen Telecom buys airtime in bulk at a discounted rate from Grameenphone, which enables Grameen Telecom to pass on savings to the village operators.[24]

The initial goal of the Village Phone Program was to install 40,000 village phones by year end 2004. According to Grameenphone's 2006 Annual Report, there were over 280,000 village phone operators by year end 2006 and 300,000 operators as of May 2007.[25]

According to data from the International Telecommunication Union (ITU) ICT Eye Survey on Universal Service, the total telephone subscriber per 100 inhabitants in 2007 in Bangladesh was 22.41, of which 0.75 were fixed telephone line subscribers and 21.66 (or 96.7 percent of total telephone subscribers) were mobile cellular subscribers.[26] This low fixed line penetration rate is partly due to the fact that the state-owned Bangladesh Telegraph and Telephone Board (BTTB) had a monopoly in the telecommunications sector until 2004 and failed to increase its subscriber base because of capacity constraints, inadequate investments, and corruption within the state system.[27] The majority of villages across Bangladesh still do not have access to a landline[28] and where access has been fulfilled, it is provided by mobile phone networks.

Grameenphone obtained a national mobile operator license in November 1996, and commenced operation in March 26, 1997. It is currently the largest telecommunications services provider in Bangladesh, with a subscriber base of 19.58 million (out of a total of 42.04 million mobile subscribers) as of May 2008.[29] In comparison, the number of PSTN phone subscribers in May 2008 was only 1.26 million. Since it began operations in 1997, Grameenphone has also built the largest cellular network in Bangladesh, installing over 10,600 base stations in more than 6100 locations, bringing nearly 98 percent of the country's population under its network coverage area.[30]

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[24] Grameen Telecom's Village Phone Program in Rural Bangladesh: A Multi-Media Case Study, Final Report (Mar. 17, 2000), available at http://www.telecommons.com/ villagephone/finalreport.pdf. See also Grameen Telecom information at http://www.grameen-info.org/grameen/gtelecom/index.html.

[25] Grameen Foundation, Village Phone Direct Manual: Enabling Microfinance Institutions to bring Affordable Communications to the Poor (2007).

[26] *Universal Service Profile, Bangladesh* (2004), accessible at http://www.itu.int/ITU-D/ICTEYE/Regulators/Regulators.aspx# under "Country Reports".

[27] M. Iqbal Ahmed and Erin C. Lentz, Enhancing the Livelihoods of the Rural Poor: The Role of Information and Communication Technology (Feb. 2007) at pp.8-9.

[28] *Id*. at p. 9.

[29] Bangladesh Telecommunication Regulatory Commission website data, Mobile Phone Subscribers (May 2008).

[30] Grameenphone website at http://www.grameenphone.com, "CEO Announces Q1 results, talks about new brand campaign", Press Release (April 2008).

Apart from Grameenphone, other private operators such as Peoples Telecommunication and Information Services (PeoplesTel) and Integrated Services Limited (ISL) were also given licenses to provide fixed line PSTN services to rural areas in Bangladesh.[31]

The initiatives of private companies like Grameenphone and Grameen Telecom's Village Phone Program in Bangladesh demonstrate the possibility of successfully extending universal service and access to remote rural villages by means other than a universal service fund.

Furthermore, the Bangladesh Village Phone Program is also an example of the emergence of mobile technology as the dominant and preferred method to providing universal service/access, particularly in developing countries where mobile penetration rates are higher than fixed line penetration rates.[32]

2.6 Funding of Universal Access and Service

2.6.1 Financing of Universal Access/Service

Key questions to be addressed in relation to the financing of UAS include

- *Does the law establish some sort of financial mechanism to support provision of UAS?*
- *Does the law provide that funding or subsidies provided must be targeted and determined and delivered in a manner that is transparent, non-discriminatory, inexpensive, and competitively neutral?*
- *Does the law establish an explicit funding arrangement for UAS or does it assume implicit (hidden) funding through fees and other indirect sources?*
- *Are there monies taken from a general government budget to support Universal Access/Service goals?*
- *Is there rate setting above cost to provide some mechanism of "support"? If so, which services have above-cost rates? Which services or infrastructure receives the support from these above-cost revenues?*
- *Are there other sources of implicit funding such as inter-carrier compensation fees? If so, which services or infrastructure receives the support from these implicit subsidies?*
- *Where government decides to fund operators through UAS programmes, are the subsidies 'smart subsidies' meaning that they are used to encourage operators to enter the market and not to create an unending dependency on subsidy?*

[31] PeoplesTel was previously Bangladesh Rural Telecom Authority (BRTA) and ISL is the successor of Sheba Telecom's rural telecommunication license.

[32] GSM Association Report, Universal Access: How Mobile can Bring Communications to All, at http://www.gsmworld.com/documents/universal_access_full_report.pdf

The financing of Universal Access and Service has gone through various stages, ranging from the application of revenues from cross-subsidies to finance non-profitable areas under a monopolistic scenario, to the creation of Universal Service Funds funded solely from operator levies so as to be able to finance universality projects in a competitive market. Obviously, there are a range of other solutions between these two solutions. Important is that countries do not focus solely on the creation of a Universal Service Fund and that they do not see it as the only way in which universality will be achieved, but that such Funds are seen as a tool amongst tools, and that in order to achieve universality, a variety of tools (as described throughout this document) are needed. Other public finance mechanisms such as loan guarantees and public private partnerships (PPPs) to enhance and target investments into priority areas in need of special finance may be applied and achieve universality more effectively.

Recently, such alternatives to Universal Service Funds have gained momentum around the world. Thus, for example, in September 2009, the European Commission adopted Guidelines on the application of EC Treaty state aid rules to the public funding of broadband networks. The Guidelines provide a clear and predictable framework for stakeholders and will help Member States to accelerate and extend broadband deployment by outlining the rules and conditions on how public funding could be provided to build broadband networks in line with the EU state aid rule. The Guidelines also contain specific provisions concerning the deployment of Next Generation Access networks, allowing public support to foster investment in this strategic sector without creating undue distortions of competition[33].

The main aim of the Guidelines is to facilitate a rapid deployment of such networks in Europe by providing to all stakeholders (including local and regional authorities, as well as network operators) a clear, predictable and comprehensive framework for the public financing of such networks. In particular, the Guidelines explain how public funds can be channelled for the deployment of basic broadband networks as well as Next Generation Access ("NGA") networks to areas where private operators do not invest. The Guidelines outline the distinction between competitive areas ("black" areas), where no state aid is necessary and unprofitable or underserved areas ("white" and "grey" areas) in which state aid may be justified, if certain conditions are met. This distinction is then adapted to the situation of NGA networks (whose deployment is still at an early stage) by requiring Member States to take into account not only existing NGA infrastructures but also concrete investment plans by telecom operators to deploy such networks in the near future. A number of crucial safeguards (such as detailed mapping, open tender, open access obligation or technological neutrality and claw-back mechanisms) are laid down in the Guidelines in order to promote competition and avoid the 'crowding out' of private investment.

The Commission provided that although investments for high speed and very high speed broadband networks should primarily be driven by private operators, state aid can play a crucial role to extend broadband coverage in areas where market operators have no plans to invest. The primary objective of the Broadband Guidelines is to foster a wide and rapid roll-out of broadband networks while at the same time preserving the market dynamics and competition in a sector that is fully liberalised. The Guidelines also ensure specify that whenever state aid is

[33] European Commission Rapid Press Release of 17/09/2009: " State aid: Commission adopts Guidelines for broadband networks", Reference: IP/09/1332, available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/1332&format=HTML&aged=0&language=EN&guiLanguage=en

granted to private operators, the aid must foster competition by requiring the beneficiary to prove open access to the publicly funded network for third party operators[34].

2.6.2 Universal Access/Service Funds

Key questions to be addressed in relation to the establishment of UAS Funds include

- *Does the law clearly provide for the establishment of a fund?*
- *Does the law clearly identify who is responsible for the management and operation of the fund and ensure the independence of this entity through clear regulatory provisions?*
- *Does the law provide that all licensed entities must contribute to the fund?*
- *Does the law provide that the percentage, flat fee or other formula used to calculate an operator's contribution to the fund is clearly defined in the Law and is applied in a non-discriminatory manner to all similarly-situated service providers?*
- *Are fees are not excessive and assessed on revenues from telecommunications services?*
- *Are payments into the fund on an annual or quarterly basis?*
- *Are operators required to file revenue reports that the fund manager uses to calculate contributions on an annual basis?*
- *Are there other reporting requirements for operators?*

A further mechanism used to help achieve the goal of universal access/service is the creation of universal service funds. These funds are being used increasingly in competitive markets to supplement market-based policies, and address access gaps and market failures in remote and under-served locations. However, there are some legitimate and understandable concerns regarding UASFs, fuelled mostly by a few unfortunate examples. Also, there have been concerns raised over the complexity of establishing and managing a UASF. Negotiating fair UAS contributions for all operators, which are equitable between all and accepted as fair, is not necessarily an easy feat.

Brazil is an example of a country which has struggled with its Fund. Although established in August 2000, the FUST has been unable to achieve its goals. FUST was first established with the purpose of creating a financial resource that could complement the deployment of universal obligations of the fixed line operators, but in reality the cost of expanding services is being borne directly by the operators. FUST's most critical challenge is that it is not technologically neutral. It favors fixed service operators over other telecommunications providers as the funds can only be applied towards fixed service projects. However, all telecommunications service providers are required to contribute thus indicating favoritism of one service over another. Acknowledging that this is not the best approach for a funding mechanism, the Ministry of Communications, in its recent public consultation on Reforming the Brazilian Telecommunications Framework, called attention to this fact and proposed that the FUST should be, at the very least,

[34] Commission Press Release IP/09/1332, State aid: Commission adopts Guidelines for broadband networks, 17 September 2009, available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/1332&format=HTML&aged=0&language=EN&guiLanguage=en

technologically neutral in its distribution mechanism. In addition, the Ministry is also considering a variety of other ways to distribute funds and to determine appropriate projects. As operators have continued to build out their networks according to their roll-out obligations, the government has collected a significant amount of FUST funds, but has only implemented one project and has no clear strategy on how to use the rest of the funds, which amount to seven billion Reais (US$ 4.31 billion).

Mechanisms need to be put in place to make universal service funds accessible to a wider range of telecommunications service providers. Limiting access of funds only to a specific category of licensee or to licensed operators, for example, can create barriers that continue to support existing conditions (i.e., the expansion of wireline networks to provide universal service/access) and discourage the implementation of new technologies to provide service in unserved or underserved areas. In Peru, telecommunications services providers with concession contracts for final public services (fixed line, including pay phones, and mobile) and value added services (data services including broadband Internet access) can access FITEL funds. If the entity/company requesting the funds does not have a concession contract for the area for which it is requesting the funds, the entity/company needs to request the appropriate expansion of the concession contract from the Ministry of Transportation and Communications.[35] Letting a variety of entities have access to universal service funds allows countries to benefit from a greater number of possible resources to help it achieve its universal service goals. In addition, these resources can sometimes provide innovative solutions for small-scale projects that would not normally be considered profitable.

In addition, the development and presentation of project proposals for universal service funds consideration should not be restricted only to the fund authority or to telecommunications providers, but instead should be open to all entities with an interest in contributing to the fulfilment of universal service/access. In Chile, project proposals can be presented by telecommunications service providers, regional/provincial/municipal authorities, universities, non-governmental organisations (NGOs), neighbourhood communities and others. SUBTEL, the entity responsible for administering and managing the country's universal service fund, uses these project proposals to design and develop the fund's annual project agenda.[36] A system where multiple parties can submit project proposals allows all interested parties to contribute in achieving universal service obligation objectives. Having multiple sources for project proposals can provide a more realistic vision of the needs and conditions of the market, such as what type of service is required by localities and which technology is best suited, and are more likely to result in creative and resourceful project solutions.

The Universal Service Fund should not only support a country's present universal service objectives, but also be able to adapt to the demands and trends of a converging telecommunications sector by fostering the use of new and innovative technologies to achieve future universal service obligation goals. The advantages and benefits of wireless technologies require that countries reconsider their universal service obligation objectives and establish

[35] OSIPTEL Board of Directors Resolution # 025-2005-CD/OSIPTEL, May 2005.
[36] SUBTEL decree approving the Guidelines for the Telecommunications Development Fund (Fondo de Desarrollo de las Telecomunicaciones), December 28, 2001.

universal service fund disbursement mechanisms that will support the implementation of new technologies to serve rural populations.

In order to encourage the use of new technologies in achieving universal service/access, countries first have to revise present universal service fund objectives. Given the importance mobile technologies are playing today in providing affordable access to previously unserved or underserved areas and the increasing usage of other new technologies in similar efforts, universal service funds should consider integrating and supporting the application and deployment of new technologies to meet universal service obligation requirements. In Colombia, South Africa and Uganda, mobile payphones and public access businesses have already been used to fulfil regulatory obligations or to meet universal service fund competition requirements.[37] Because wireless technologies can usually be deployed faster and more affordably, incorporating them into universal service fund programs can provide countries with the means necessary to meet universal service obligation priorities more efficiently and effectively.

To ensure the smooth incorporation of new technologies into universal service fund programs, and guarantee the equal participation of all telecommunications sector participants, countries also need to make certain that the purpose of the universal service fund and the role of the universal service provider is well-defined. When Peru's FITEL fund was established, it was determined that the fund would provide populations in rural areas and localities considered of "preferred" social interest with greater access to telecommunications services. In addition, the fund's administration and management regulations stipulated that FITEL would not finance past or future network expansion obligations imposed on telecommunications operators by the government. Thus, the incumbent operator was excluded from accessing FITEL funds to finance its rollout obligations.[38] In Uganda, RCDF funds are only used to improve and service rural areas. In addition, "serve or lose" clauses have been included in main operator licences with regards to rural areas motivating main operators to effectively comply with universal service obligation, but also providing new market entrants with an opportunity to provide those services if the main operator fails to do so.[39] In India, the universal service fund is currently facing problems because, aside from being eligible for universal service funds, the incumbent operator receives Access Deficit Charge (ADC) revenues (that have been reduced from 30 to 10 percent, but that come from the country's universal service fund) to cover its deficit for providing fixed lines in rural and urban areas. This gives the incumbent operator a "favoured" position in comparison to other telecommunications service providers that have access to the fund.

[37] Universal Access and Universal Service Funds: Insights and Experience of International Best Practice, Intelcon, July 2005.

[38] OSIPTEL Resolution No. 48-2000-CD/OSIPTEL approving Regulations for the Administration and Management of the Fondo de Inversion de Telecomunicaciones (FITEL), October 2000; and Aprueban Normas Complementarias al Reglamento de Administracion y Funcionamiento de FITEL y su Exposicion de Motivos, OSIPTEL Resolucion de Consejo Directivo No. 025-2005-CD/OSIPTEL, May 2005

[39] The Challenge of Universal Access – African Solutions for Africa, Country Case: Universal Access in Uganda, Patrick F. Masambu, March 1-4, 2005.