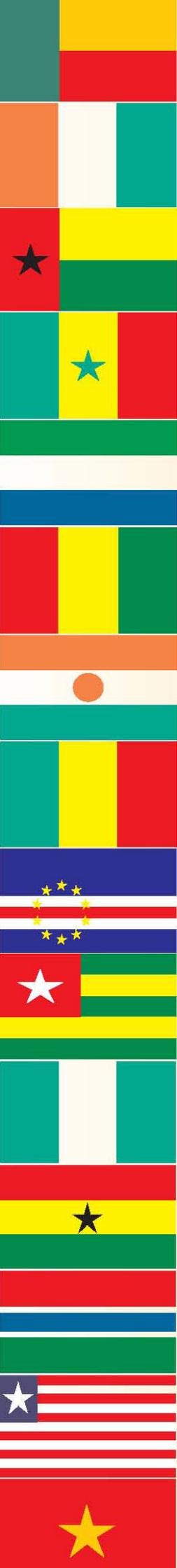


# West African Common Market Project:

Harmonization of Policies  
Governing the ICT Market in  
the UEMOA-ECOWAS Space

Universal Access and  
Universal Service



European Union





## **Universal Access and Universal Service**

Within the framework of the ITU/EC project to support the establishment of the integrated ICT market in West Africa (ECOWAS-UEMOA), best practices and guidelines on various regulatory aspects of ICTs were identified and developed. In the first phase, validation workshops were organized in 2004 on the following regulatory aspects: interconnection, universal access/service, licensing, numbering, and spectrum management. Following these workshops, the comments of the participants were incorporated and the documents were revised in order for ECOWAS-UEMOA to have at their disposal a regulatory framework best tailored to their member countries in the era of the Information Society.

The first version of the report on universal access/service was developed by Mr. Abossé Akue-Kpakpo and presented at the Universal access/service Validation Workshop in Abuja, Nigeria, 28-30 September 2004. The report was revised and updated by Ms. Mandla Msimang. The present document will be presented to ECOWAS/UEMOA member countries for final approval.



# Universal Access and Universal Service

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## 1 INTRODUCTION

The terms ‘information society’ and ‘knowledge economy’ illustrate the importance of information and communications technologies (ICTs) in social and economic development in the 21<sup>st</sup> century. Governments have realised the importance of putting in place telecommunications networks, and connecting people to those networks if they seek to accelerate economic growth. In recognition of this, for years, catch phrases like ‘leapfrogging technologies,’ ‘bridging the digital divide’ and narrowing the gap between the ‘information rich’ and the ‘information poor’ have littered policy discourse aimed at addressing a fundamental challenge of communications policy – universal access/service.<sup>1</sup> Governments have for decades designed policies and changed their market structures in pursuit of universal access/service, initially to telephony, and more recently to communications technologies, at affordable rates.

Notwithstanding the challenges, both legitimate and exaggerated, of delivering communications services to rural, remote and low-income segments of the population, it is a well-recognized principle of communication theory that the more individuals, groups and institutions that are connected with public networks, the more valuable those networks will be for each individual, for the public at large, and *for operators and investors as well*. This practical and theoretical understanding, known as network effects, underpins universal access/service policy.

Despite the network effects associated with telecommunications, universal service cannot be delivered by the market alone; the best that the market can do is to address the *market efficiency gap* (see Section 2.5). Similarly governments cannot tackle the challenges posed by the delivery of universal access/service nor can they take advantage of the opportunities that it presents, without private sector participation. The goals of universal access or universal service therefore represent both a special challenge and a unique opportunity for the public and private sectors to cooperate to deliver much needed communications services, which in many countries are considered a human right, to communities<sup>2</sup>.

### 1.1 Context of this Study

The World Bank/ECOWAS Harmonization of Telecommunications Policies in ECOWAS Final Report (“the World Bank/ECOWAS Report”) provides a backdrop for this study. It precedes the ongoing International Telecommunications Union (“ITU”)/ European Union regional project in

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<sup>1</sup> The terms universal access and universal service are often used interchangeably, because of their similar meanings (and in fact, in this report, the terms will often be combined as “universal access/service,” where the discussion encompasses both concepts). But the difference between the two terms must be appreciated. Universal service means that every household in the country has telephone service, traditionally, a fixed-line phone for every household. This may be a practical policy objective in many developed countries, but in most developing countries it is a long-term goal. A more practicable, readily achievable goal for developing countries in the short to medium-term is universal access. Universal access means that everyone in a community can gain access to a publicly available telephone, although not necessarily in their homes. Universal access can be available through payphones, telecentres, multipurpose community centres or even single entrepreneurs who market mobile phone service on a per-call basis. The goal underlying both policies are similar – to expand and maintain the availability of affordable telecommunications and ICT services to the public. (Trends in Telecommunication Reform 2003: Promoting Universal Access to ICTs – Practical tools for Regulators, Chapter 1, ITU)

<sup>2</sup> See Ghana’s Draft Telecommunications Policy Declaration, dated 8 June 2000

support of the establishment of an integrated ICT Market in West Africa, of which this study on universal access/service best practices is a part.

This report will address the question of follow through with respect to the specific policy area of universal access/service to communications services. With reference to international best practices, it will address the challenges of complementing the existing broad legal principles in the ECOWAS-UEMOA region with more detailed policies and regulations to achieve the goal of *connecting people to communications networks at reasonable rates*. It will further address the challenge of adapting such approaches to local conditions to the greatest extent possible.

## 1.2 Outline of the Report

ECOWAS has 15 Member States which are the primary audience of this report. These Member States are Benin, Burkina Faso, Cape Verde, Côte D'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. The UEMOA member states are Benin, Burkina Faso, Guinea-Bissau, Mali, Niger, Senegal and Togo Annex A provides a snapshot of the salient features of the universal access/service landscape in these countries.

This report aims to serve as a background paper for policymakers, regulators and other decision makers in ECOWAS-UEMOA Member States. The reference in this study to "ECOWAS-UEMOA" as a single unit is only for convenience, and to distinguish ECOWAS-UEMOA as a separate social and economic block. Notwithstanding this, it is in fact important to recognise that universal access/service policies are *national* in scope, and that they therefore must be considered in the context of national legal, policy and institutional frameworks. It is recognised that there is considerable variation across the ECOWAS-UEMOA region. The particular and specific physical, structural, and behavioural characteristics of the country attempting to develop universal service policies are of critical importance and must be taken into account.<sup>3</sup>

This Report sets out and builds upon existing texts on universal access/service policy and legislation. References to these secondary sources are updated, where necessary, in response to technological and market developments, developing country contexts and where possible nuances specific to the ECOWAS-UEMOA region. Over the years, governments have gained significant experience in designing and implementing universal access/service policies – such experiences, where relevant to the country specific scenarios that are the subject of this report, will be discussed as follows:

**Section 1** provides a context for this report by setting out the introduction and background. **Section 2** sets out the scope and objectives of universal service and universal access policies. It does so by explaining the differences between the market efficiency gap and the access gap, tracking technological developments, and outlining the international context for universal access/service, and analysing it with respect to the ECOWAS-UEMOA region. In so doing provides background for the regional context of such policies.

**Section 3** of this report is focussed on key questions that must be answered by national regulatory agencies ("NRA's") and policymakers in order to "authorise and enable"<sup>4</sup> universal access/service policy. This section tackles fundamental questions such as those with respect to the definitions of

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<sup>3</sup> Marcelle, Gillian M. "Universal Service in Africa: Solving the Dilemma," Published paper for Session S.2. Financing Strategies getting the mix right between local and international investment, ITU Africa Telecom (1998).

<sup>4</sup> The terminology of "authorizing and enabling" is from Townsend, D.N. "ITU/CTO Model Universal Service/Access Policies, Regulations and Procedures. Part I: Universal Service/Access Policy, and Creation and Operation of Universal Service Funds" and ITU Trends 2003.

universal access/service; the determination of affordability; the implementation and financing of universal access/service goals; the determination of targets and subsidies, and the verification of universal service obligation (“USO”) costs. These are key questions that regulators and policy makers must tackle which will feed into the universal access/service policy or strategy that is ultimately pursued.

In **Section 4**, the report considers various policy options available to regulators and policymakers in order to address universal access/service once the questions in Section II have been answered. **Section 4** presents universal service as not just a challenge, but as an opportunity and looks at traditional ‘command and control’ obligations which it terms “pay” obligations, and it also outlines more recent incentive-based strategies, which it terms “play.” The gamut of “pay and/or play” options that have been employed are set out in this section.

**Section 5** looks at funding universal access/service strategies. It discusses the establishment and management of universal service funds, and considers the issue of allocation of monies from the fund. In so doing, this section looks in detail at targeted subsidies and verifying USO costs.

Although the entire report takes cognisance of the evolution of the narrowband divide into a broadband divide, **Section 6** analyses the implications of this on the implementation of universal access/service policies in developing countries. Above and beyond access to voice, it is acknowledged that data services are becoming more critical in the ICT sector. Traditional universal access/service policies alone will not ‘bridge the digital divide’; in fact as technology advances and the divide encompasses access to data services as well as traditional voice services, basic education and training, and associated issues such as language and literacy, become key to ensuring equal access and use of ICTs by all members of society. This section will also look at the importance of establishing intergovernmental relationships in order to take advantage of the opportunities presented by the growth of the ICT sector.

**Section 7** provides guidance on measuring the success of universal access/service strategies and policies. It focuses on the important aspects of reviewing obligations and checking progress both quantitatively and qualitatively.

Finally, **Section 8** concludes the report. It summarises that discussions in the report and presents some general recommendations.

## 2 SCOPE AND OBJECTIVES OF UNIVERSAL ACCESS/SERVICE POLICY

### 2.1 Market Reform: The International Context

The international telecommunications community's outlook on the opportunities and mechanisms for expanding network development and access in developing and least developed countries has changed significantly in recent years. Dramatic technological and market developments over the past two decades have resulted in a significant change in the assumptions and practices that previously influenced policy debates and operator behaviour. In particular this paradigm shift is occurring as sector reform, characterised by the review and adoption of new legislation to provide a framework for (partial) privatisations, market liberalisation and regulatory reform. Sector reform is becoming the norm in almost every region, including ECOWAS-UEMOA. Universal access/service policy must be considered within this context and should be seen as part of, and in line with, these measures to facilitate sector reform.

Sector reform has become a key characteristic of most telecommunications sectors globally, and the situation in the ECOWAS-UEMOA region is in many respects in line with global trends. The introduction of competition has been uneven. A small but growing majority of countries are introducing competition in fixed-line services such as local and long distance telephony<sup>5</sup> while an overwhelming majority of countries, allow competition in the mobile and Internet access markets.

The growth in competition has meant that more private sector entities have become players in communications markets. Out of the 15 countries in the ECOWAS-UEMOA region, only Cape Verde has fewer than two mobile operators; 6 (six) countries including Côte d'Ivoire, Senegal and the region's largest markets, have two mobile operators.<sup>6</sup> Global trends show that more than a third of all countries around the world had three or more competing mobile operators by the end of 2002.<sup>7</sup> In the ECOWAS-UEMOA region as a whole, 29 GSM licences have been awarded in 10 countries. With respect to fixed, six countries have introduced competition in the fixed line sector and thus opened up the traditional telecommunications monopoly to private sector participation.<sup>8</sup>

The provision of mobile service by an operator other than the incumbent introduces competition into local service markets, and a majority of developing countries, including all of the ECOWAS-UEMOA countries now have more mobile than fixed subscribers. This growth in mobile subscribers has resulted in a shift from the traditional focus on fixed line incumbents for service delivery and has had significant implications on the design and delivery of universal service goals and policies.

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<sup>5</sup> ITU Trends in Telecommunication Reform 2004: Licensing in an Era of Convergence, Chapter 1, paragraph 1.3

<sup>6</sup> <http://allafrica.com/stories/200504250132.html>, Balancing Act, 25 April 2005. It should be noted that Senegal is tendering for an SNO that will be able to run mobile services.

<sup>7</sup> ITU Trends 2004, Chapter 1, paragraph 1.3.

<sup>8</sup> Ikhemuemhe, Godfrey. "Vanguard" Posted May 18, 2005, Telecoms: ECOWAS plans 10% teledensity; to establish GSM roaming facility  
<http://www.vanguardngr.com/articles/2002/features/technology/tec318052005.html>

**Table 1 – Mobile Penetration Rates in ECOWAS-UEMOA Region <sup>9</sup>**

	<b>Population (millions)</b>	<b>Mobiles (thousands)</b>	<b>Mobiles/100</b>
Benin	6.92	236.2	3.36
Burkina Faso	13.39	398	2.97
Cape Verde	0.47	65.8	13.94
Côte D'Ivoire	16.9	1'531.8	9.07
Gambia	1.46	175	11.97
Ghana	21.38	1'695	7.93
Guinea	8.62	111.5	1.44
Guinea-Bissau	1.54	1.3	0.1
Liberia	3.49	...	...
Mali	13.41	400	2.98
Niger	12.41	76.6	0.62
Nigeria	127.12	9'147.2	7.2
Senegal	10.34	1'028.1	9.94
Sierra Leone	5.17	67	1.35
Togo	5.02	220	4.4
<b>ECOWAS/UEMOA</b>	<b>247.63</b>	<b>15'153</b>	<b>6.24</b>
<b>Sub-Saharan</b>	<b>671.42</b>	<b>31'942</b>	<b>4.8</b>
<b>Africa</b>	<b>869.02</b>	<b>76'847</b>	<b>8.8</b>

Many NRAs, including those in Ghana and Nigeria, have made great strides in fostering the kind of competitive markets that have attracted investment and brought ICT access to more end users. Others, however, seem to view regulation as a means to control a sector that is changing in ways that threaten the status quo. This is demonstrated through a lack of political will to act in some instances, and an ineffective institutional framework or high regulatory barriers in others. These factors stand in the way of such countries participating meaningfully in the Information Society.

It should be noted however that in addition to regulatory and policy constraints on sector reform, the market itself has played a role in stalling sector reform in some countries. Analysts have noted that “the recent collapse of telecommunication and technology equity markets, a shrinking pool of global investment capital for innovation, and a number of failed privatization efforts have induced lower tolerances for risk, and reduced private sector-led infrastructure investments and lending for emerging markets.”<sup>10</sup>

This report on universal access/service is presented at a time when the ECOWAS-UEMOA region is preparing to take critical steps to address these challenges and opportunities brought forth both by government and the market, and in so doing, assess how far it has come and whether the time is right to push beyond its initial sector reforms and adapt them more closely to their national goals.

<sup>9</sup> ITU African Telecommunication Indicators, 2004.

<sup>10</sup> Information and Communications Technologies: A World Bank Group Strategy, 2002.

## 2.2 Key Principles: The World Trade Organisation

Many countries have embarked upon sector reform in line with the General Agreement on Trade and Service (GATS) and the World Trade Organization's (WTO's) Agreement on Basic Telecommunications (the WTO Agreement). The WTO Reference Paper, which entered into force in 1998, forms part of the WTO Agreement and deals both broadly and specifically with universal access/service. Although of the ECOWAS-UEMOA Member States only Côte D'Ivoire, Ghana and Senegal are signatories, with all three having committed to the WTO Reference Paper on regulatory principles, the WTO Reference Paper represents a good indicator of international norms and standards with respect to universal access/service.

First, the Reference Paper presents signatories with the option of deregulating their domestic markets, while negotiating market access and non-discrimination internationally. Essentially, **reliance on competition to meet technical and social demands is seen to play a role in increasing universal service** by promoting economic efficiency and technological achievement.

Second, the Reference Paper sets out basic regulatory principles which address aspects such as **licensing, interconnection, anti-competitive behaviour and transparency, which are all critical to telecommunication reform and which, in turn, will facilitate the implementation of universal access/service policies**. In addition, the Reference Paper deals specifically with universal service (and, by extension, also universal access) and invites each country to define its own objectives accordingly.

Any Member has the right to define the kind of universal service obligation it wishes to maintain. Such obligations will not be regarded as anti-competitive per se, provided they are administered in a **transparent, non-discriminatory and competitively neutral** manner and are not more burdensome than necessary for the kind of universal service defined by the Member.

Universal access and service policies must not violate either the Reference Paper or the WTO Agreement itself. Notwithstanding the fact that not all ECOWAS-UEMOA Member States are signatories, the principles enshrined in the Reference Paper remain valid. Open and competitive markets are key to securing the public interest objectives of universal access/service, however, as will be explored later in this report, they alone may not make a sufficient contribution to addressing the challenges. Competition and transparency form a foundation, but are not a panacea.

## 2.3 Legislative Reform to Facilitate Universal access/service

Given the backdrop provided by international and multilateral organisations, legislative reform must be taken in several countries. At present, with the exception of Sierra Leone, the Gambia and Liberia, all of the ECOWAS-UEMOA Member States have now passed a basic telecommunications law.<sup>11</sup> In some instances this legislation has been promulgated without a drafted or approved policy document. The absence of policies on telecommunications may present an obstacle and represent a "cart before the horse" scenario since legislation should ideally enable policy and be guided by it. However, given the broad nature of most legislation with respect to universal service and regulation this should not be an obstacle, although it should be noted in case amendments may be needed to the law in order to facilitate universal service policy once developed.

In several ECOWAS-UEMOA Member States the telecommunications law, which sets the legal framework for telecommunications reform, deals explicitly with universal access/service.<sup>12</sup> This is

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<sup>11</sup> Akue-Kpakpo, Abossé (2004). Universal Access Policies in ECOWAS Region.

<sup>12</sup> Benin, Burkina Faso, Guinea Bissau, Mali, Niger, Nigeria, Senegal, Togo (Source: Akue-Kpakpo, Abossé, pg 20 (2004).

the norm internationally with a range of countries such as Peru, Chile, the United States, the European Union (EU) and India incorporating explicit statements on universal access/service in the communications legislation and policies. In addition many countries either have issued, or are in the process of issuing, regulations or other forms of subordinate legislation, on universal service, and/or the establishment of universal service funds (“Funds”).

Although it appears that there has been a widespread adoption of Funds as a means of addressing universal access/service challenges, and there is provision in almost all ECOWAS-UEMOA national legislation for Funds, it is key that they are situated in the proper policy context in order for them to be effective. Extensive literature on universal service funds exists.<sup>13</sup> It should be noted that universal service funds, of course, are not the only means of reaching national universal access/service goals. There are a variety of other measures which will be explored in Section III that can be implemented to improve access to ICTs, including further market reforms, licensing alternative technology service providers, and promoting infrastructure sharing. Of course, universal service funds may be used in conjunction with a variety of other measures aimed at increasing access.<sup>14</sup>

#### **2.4 Institutional Reform to Facilitate Universal access/service**

In addition to reforming legal and policy frameworks, institutional frameworks must be put in place to facilitate universal access/service. A capable NRA is needed to effectively implement a universal access/service framework as part of a managed liberalisation process. In some cases, as will be explored in this report in Section V, countries have established an agency separate from the national regulatory agency to deal with universal service policy and administer the universal service fund.

With respect to institutional reform among ECOWAS-UEMOA countries, all except one have separated Post from Telecommunications activities while initiating the liberalization of the sector. Of the 15 (fifteen) ECOWAS-UEMOA Member States, 10 (ten) have established telecommunications NRAs, while 2 countries opted for multi-sectoral regulatory agencies. In addition, ten countries have established broadcasting regulatory agencies. Worldwide, a major policy and regulatory challenge of harmonising national policies and regulatory initiatives on the regional levels in line with international best practices has been identified.<sup>15</sup> A process has been started for policy and regulatory harmonization as evidenced by the creation of the West African Telecommunications Regulators’ Association (“WATRA”).

#### **2.5 Mind the Gap: Distinguishing Between the Market Efficiency Gap and the True Access Gap**

Even with solid legal, regulatory and institutional arrangements in place, reforming the telecommunication sector is a complex and multifaceted task. Sector reform, characterised by the introduction of competition, with private sector participation and an independent regulator as a key facilitator, forms an important backdrop to the discussions in this report on universal access/service.

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<sup>13</sup> For example: Townsend, D. N. “ITU/CTO Model Universal Service/Access Policies, Regulations and Procedures. Part I – II.” And “Telecommunications and Information Services for the Poor: Toward a Strategy for Universal Access.” World Bank Discussion Paper No 432. April 2002. and ITU Trends 2003.

<sup>14</sup> Townsend, “ITU/CTO Model Universal Service/Access Policies, Regulations and Procedures. Part II: Minimum Subsidy Competitive Auction Mechanisms for Funding Public Telecommunication Access in Rural Areas” and ITU Trends 2003.

<sup>15</sup> Gillwald, A. Policy and Regulatory Challenges of Access and Affordability.

Through sector reform and the introduction of competition, the targets of universal service policy can be seen as representing not a burden or constraint, but an opportunity for market growth. This thinking represents a fundamental shift from previous thinking on universal access/service and therefore challenges traditional approaches to addressing universal access/service. It is common knowledge that in many ways the liberalisation of telecommunications markets and the introduction of competition, if properly implemented, will increase efficiency, thus lowering prices, and at the same time improving the choice and quality of services provided. In addition to reducing prices, in many cases, competition will increase the scope of people who receive services – *but not always*.

It has been noted that there may be limits to how well the market can or will function in extending service to all potential customers, even if it is operating at its theoretically most-efficient level.<sup>16</sup> To design successful universal access/service strategies, a critical first step is for policymakers to distinguish the impact that the market can have on delivering universal service, i.e. the market efficiency gap,<sup>17</sup> from the true access gap.<sup>18</sup>

The market efficiency gap can be bridged through sector reform – through more private provision of services, facilitated by effective competition, and by market-oriented policies and regulations that create a level playing field for new entrants. The only questions relate to how far the market can reach commercially, and how best to introduce and implement more competitive conditions. It does not require any targeted action by government.

However, it must be recognised that the market alone cannot address the needs of all of the citizens of a country. This is particularly true where there is no financial or commercial incentive for the market to attend to the needs of the broader community. Furthermore, even where there is a will to provide services, the financial volatility of the current telecommunications market places additional constraints on the ability of the market to deliver universal access/service. The fact is that foreign investment flows to developing countries are not constant and respond to a number of factors beyond policy environments.<sup>19</sup>

As such, in spite of sector reform there are segments of the population and geographic areas that will not be serviced by the market. These areas will only be reached if governments intervene to encourage new and existing operators to service these areas at affordable rates.<sup>20</sup> **This report focuses on addressing this second gap, the true access gap, which policymakers must focus on by defining the level and type of government intervention through universal access/service policies.**

### **2.5.1 Defining the Limits of the Market in Developing Countries**

It has been argued that in terms of priority, regulators must first eliminate the market efficiency gap (through sector reforms and market development) and only when the market gap is filled, and the access gap becomes apparent, should they then turn their attention to the access gap.

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<sup>16</sup> ITU Trends 2004, Chapter 3, paragraph 3.4.

<sup>17</sup> The market efficiency gap is the difference between what markets are actually achieving under current conditions and what they could achieve if regulatory barriers were removed and regulation were used to provide incentives.

<sup>18</sup> “The true access gap, on the other hand, recognizes that intervention is still required to reach some areas and population groups that will not be served even with the most optimal, efficient and liberalized market conditions.” Chapter 3, paragraph 3.4, ITU Trends 2003.

<sup>19</sup> Information and Communications Technologies: A World Bank Group Strategy, 2002, pg 10.

<sup>20</sup> ITU Trends 2003, Chapter 3, paragraph 3.4.

Although theoretically correct, this approach poses a challenge for developing countries where access to telecommunications services is extremely low (below 5% fixed line teledensity) and where due to poverty, affordability is a more acute problem. Furthermore, given the size and nature of rural populations (in many African countries, the rural population is significantly larger than the urban population), in such environments, taking into account the fact that delivery of communication services is a key objective of governments for various reasons (see paragraph 3.2) *wait and see* is a luxury that cannot easily be afforded. In developed countries like **Canada, Sweden and the United States**, sector reform is well underway and NRAs are more readily able to identify the access gap. In many developing countries, including ECOWAS-UEMOA Member States, the tasks set by sector reform policy have not yet been properly implemented. The urgency of addressing the digital divide in such contexts is much more heightened, and experience has shown that in many cases in South America, Asia and Africa, strategies to address the access gap have been employed alongside sector reform, or market efficiency gap, strategies.

One recognises that the approach mooted by many experts is based on the need to obviate the very real risk that regulators may apply subsidies and employ strategies that distort the market and simply perpetuate the inefficiencies of the existing regulatory regime and marketplace, instead of adopting approaches that allow the market to deliver universal access/service to the greatest extent possible. It must also be noted that this approach may be appropriate and effective for jurisdictions where privatisation and liberalisation policies have been long-implemented and have had time to take their toll and produce results. However, given the urgency issue in developing countries, the pursuit of universal access/service cannot reasonably be delayed. Particular efforts, through research and targeted policies, should be made to ensure that universal service strategies implemented prior to sector reform setting in do not distort the market or affect market access gap strategies that are already underway. What is required is sufficient regulatory flexibility that will enable countries to address the efficiency and access gaps.

Recognising that in many developing countries sector reform is still at its initial stages so the access gap is being tackled before the market efficiency gap has been clearly identified. In such instances policy makers and regulators must carry out a diagnostic survey of the current and likely future, state of universal access/service in the country before intervening. This survey must try to *anticipate* market failure and *approximate* the access gap. In so doing, it should include data gathering, research, estimates and analysis of the factors described below:

#### **2.5.1.1 Supply-Side Market Characteristics**

Supply-side market factors have to be taken into account in trying to establish or approximate the limits of the market efficiency gap. They include the following<sup>21</sup>:

- **Actual Network Coverage:** Policymakers and NRAs should examine existing networks and technologies that may be used to provide the services that will be mandated in the universal service programme/s. They should further consider geographic and population coverage. The analysis of this data, together with information on actual population distributions, will reveal which populated areas or localities are not currently covered by the network.
- **Current Network Access/Subscriber base:** While geographic coverage is fundamental, in order to communicate, people do not need coverage only, but a real means to access the network. As such, policymakers and NRAs must have an understanding of fixed and mobile

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<sup>21</sup> Adapted from Townsend, DN. "ITU/CTO Model Universal Service/Access Policies, Regulations and Procedures. Part II: Pg 2-3 which is a discussion of steps needed to design a universal service programme and ITU Trends 2003.

teledensity. For instance, there is very little empirical data regarding the percentage of all wireless subscribers that do not also have fixed access (either at home or at work). This data would be useful in determining the extent to which mobile networks are actually expanding the number of households that have baseline access to telecommunications, rather than simply providing additional access opportunities to households that already have it. Obtaining and analysing data on this question, together with local population data, will allow the policymakers to better identify which localities currently do not have access to any type of telecommunication service at all.<sup>22</sup>

- **Future Coverage/SubscriberBase:** In addition to current rollout and subscription, expected future network coverage and corresponding subscriber targets must be measured. Clearly, if it can be reasonably expected that, in the short-term, a significant portion of the currently unserved population will receive service without any targeted policy action, the policy and the programmes it creates may be scaled back or even deemed unnecessary. Future increases in coverage and subscription may result from the normal, expected growth of the sector or from rollout obligations imposed on operators.<sup>23</sup>

### 2.5.1.2 Demand-Side Factors

On the demand side, the most critical factor that will have to be considered to approximate the limits of the market is the result of an affordability assessment.

- **Affordability Assessment:** Regulators and policymakers should gather information on individual or household expenditures on telecommunications and other services. Combined with income data (preferably by region and city), this information will provide an indication of the current and expected affordability of telecommunication services in each region and city. This will enable the determination of a realistic target for geographic and population coverage. The affordability assessment should, importantly, also take into consideration any potential changes in consumer tariffs, for instance as a result of a consumer tariff rebalancing plan (see paragraph 2.6, Affordability).<sup>24</sup>

Although approximating the market efficiency gap by taking into account the above-mentioned supply and demand side factors is not precise and therefore not ideal, it facilitates the immediate focus on designing strategies to address the access gap in areas where sector reform has not yet taken off.

## 2.6 Harnessing Technology

In addition to market developments, the rapid pace of change in the communications sector and recent advances in technology have been highly influential in the ability of many countries to move closer to achieving their universal access/service goals. Technology, and the deployment by the private sector of same, is having a positive impact on the accessibility, availability and affordability of ICTs. Technological evolution – in particular the development of wireless technologies, coupled with the declining costs of equipment have made serving rural and remote areas less of a physical challenge. Technological evolution has also led to an evolution of services – a shift from a voice-centric approach to universal access/service has been experienced as data services have been introduced on many different types of technological platforms.

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<sup>22</sup> ITU Trends 2003, Chapter 5.

<sup>23</sup> ITU Trends 2003, Chapter 5, paragraph 5.2.6.

<sup>24</sup> Townsend, DN. “ITU/CTO Model Universal Service/Access Policies, Regulations and Procedures. Part II: Pg 3 and ITU Trends 2003.

### **2.6.1 Fixed Internet Access**

Fixed Internet access, which necessarily relies on the wired telecommunications infrastructure which has been the focus of universal access/service policy for decades, is plagued by problems associated with connectivity and affordability. The same infrastructure and economic challenges underlie universal access to Internet as universal access to public switched telecommunications services (PSTN) telecommunications facilities. However, rather than just reflect this divide, the divide in access to Internet is made more challenging due to the fact that the reliance on ICT is accompanied by a new requirement that in order to successfully tackle the digital divide in addition to the economic and infrastructure challenges, ‘soft’ factors of awareness and education now need to be factored into universal service discussions.

Further to the social challenges posed by the inclusion of Internet access as a goal of universal access/service, it brings to light challenges with respect to quality and speed. Quality and speed are critical aspects in the ability of the Internet to deliver services. Thus addressing the narrowband divide is merely a first step in harnessing the potential of ICTs, increasingly, addressing the broadband divide, and enabling populations to access a wider and richer range of applications through higher speed services, is becoming critical.

In relation to fixed broadband growth and development, success factors vary from country to country. Factors that can stifle broadband roll-out have been clearly identified by the ITU as including lack of competition, and in particular the presence of monopolies. Insufficient competition in the provision of broadband services is often illustrated in service offerings, such as ADSL, that are characterised by

- high or metered pricing,
- the imposition of caps on data that can be downloaded under a flat rate
- lack of competition in the ‘middle mile.’

These factors increase the cost of services and decrease the quality and functionality available to users, thus negatively impacting the take up of broadband services. Some of the factors that positively impact take up are government driven and reflected in national policies, others are not.

Critical elements in the policy framework include competition (both wired and wireless), promotion of innovation, development and roll-out of multi-functional and relevant applications, affordable, innovative and transparent pricing schemes, such as flat-rate packages, high-speed and high-quality service offerings to consumers, and high PC and Internet penetration.

Finally, apart from the policy framework, some characteristics of a country, such as the level of urbanisation play an important role in the take up of broadband – this is important for less urbanised countries to note. Broadband has tended to grow the fastest in environments with highly-urbanized populations, especially where a high percentage of citizens live in apartment buildings. The age of the population is also an important factor to take into account with user take-up being more rapid among younger populations.

Much in the same way that mobile wireless technologies have revolutionised the voice market, they have allowed policy makers to look beyond fixed access for the delivery of data services. In so doing, mobile wireless has been able to address many of the limitations of fixed access.

### **2.6.2 Wireless Internet Access: 2G, GPRS, 3G, WiFi, WiMax and beyond**

The impact of mobile wireless technologies, in particular, on development cannot be overstated. Wireless in general and the advent of pre-paid technology in specific, has had a huge impact on the ability of previously marginalised consumers in developed and developing countries to access telephony.

The positive impact of mobile wireless technologies is one of the key reasons for a shift in thinking about universal service policy, and a decreased reliance on traditional fixed technologies to deliver universal service. Indeed, if one discounts mobile subscribers, the growth in the telecommunication market in many developing countries has been negligible. The success of mobile lies in many factors – traits inherent to mobile – its accessibility, the relative ease with which it can be rolled out (as compare to fixed) and convenience. In addition **innovative pricing strategies** such as the introduction of pre-paid which has heavily influenced accessibility by lowering entry barriers for consumers, and affordability by allowing users to control their spending, is great.

### **The Impact of Pre-Paid**

One of the key contributors to the rapid take-up of mobile telephony in developing countries has been innovative pricing strategies, such as the development of prepaid subscriptions which lowers entry barriers into the market by:

- keeping users on the network on an ongoing basis, while eliminating the requirement that customers enter into binding long-term service contracts;
- addressing the ability of users to control their expenditures on telecommunications;
- facilitating relatively quick and easy sign-up processes for services; and
- alleviating barriers previously created through requirements to check the credit history of potential customers.

The impact that mobile has had on voice can and will inevitably be easily translated to data and ICT services broadly given the fact that the mobile phone is no longer simply an instrument for voice communications, but it now combines voice functions with data services from those as basic as SMS to those as advanced as broadband internet access. The uptake of basic data services such as SMS has been significant given that SMS allows people to communicate at a lower cost. The fact that as mobile evolves, it is not just SMS, but advanced data services (through technologies such as 3G, EDGE, GPRS, etc) that are available to subscribers is positive. If the handset permits, subscribers can have access to a whole host of ICT services through mobile phones. Given the relatively high mobile penetration rates in many countries this is an important factor to bear in mind.

In addition to the standard 2G services that have been lauded, the last five years have seen the introduction of 3G services; more recently, in 2003 WiFi was introduced commercially; and technology continues to develop. Technology is critical in addressing universal access/service in that each generation or iteration of a previous technology addresses some of the challenges of that before it. 2G provided standard mobile cellular services and allows for access to the internet. Then came General Packet Radio Services (GPRS), the trigger to 3G services, which provides for an ‘always on’ network connection, so that mobile subscribers (like fixed line ADSL subscribers) can be online all the time. 3G was then introduced to provide the same service, but it also addresses the challenges of speed and mobility; while Wi-Fi and more recently WiMax, by enabling multiple users to share the same mobile, wireless Internet connection, has created new opportunities for affordable shared internet access.

NRAs and policymakers must not underestimate the importance of technology in delivering universal access/service. Notwithstanding the fact that a technology neutral approach to regulation making and policy is key, this should not mean that technology is not taken into account in designing successful policies. Rather than interpret technology neutrality to mean ignoring technology, a technology neutral approach should be interpreted as one which facilitates technological development and innovation without prescribing or stifling any specific technology. Further, because NRAs and policymakers cannot anticipate technology, it is important that they keep abreast of developments and monitor progress in that regard. Although most countries are

familiar with 2G and 3G, a discussion of Wi-Fi and WiMax, two of the ‘newer’ technologies follows. In addition a discussion on satellite technology ensues.

### 2.6.2.1 Wi-Fi

The bandwidth and capabilities Wi-Fi<sup>25</sup> offers are already greater than those promised by 3G. One of the main differences between cellular and Wi-Fi is that the cellular system uses the licensed spectrum, and Wi-Fi is implemented in unlicensed bands; this difference has a fundamental impact on the economic basis for the rollout and implementation of Wi-Fi. Wi-Fi is intended for the local area network level.

Further to the difference between the economic case for cellular and WiFi, unlike mobile cellular technologies<sup>26</sup>, Wi-Fi does not offer roaming and authentication features, further the narrowness of the available spectrum and the limited range of Wi-Fi pose challenges for broad commercial deployment which could compete with mobile cellular. However, Wi-Fi is suited to affordable shared access and thus is a useful universal access technology.

### 2.6.2.2 WiMax

The WiMAX<sup>27</sup> protocol relies mainly on licenced spectrum in the 2 to 11 GHz range and is a way of networking computers together, for example to provide internet access, in a similar way to Wi-Fi. However, WiMax takes Wi-Fi one step further in that it is both faster and has a longer range than Wi-Fi, the metropolitan area (MAN). Rather than conflict with Wi-Fi, WiMax is designed to interwork and may indeed complement it.<sup>28</sup>

Early WiMax products have been aimed at network service providers and businesses, rather than consumers, but its potential to enable even more people to access the Internet wirelessly, relatively cheaply and easily can easily be harnessed to address universal access challenges. In comparing WiFi and WiMax proponents say that WiMax coverage “is measured in square kilometers while

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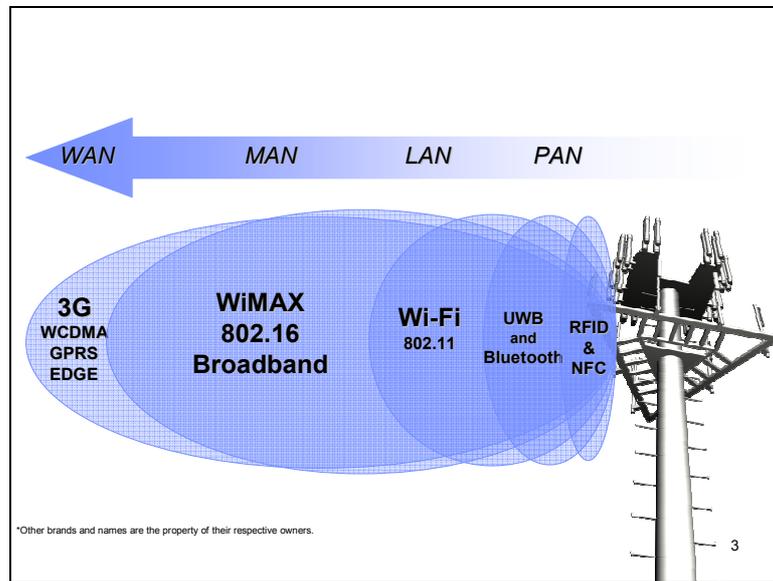
<sup>25</sup> Wi-Fi is a wireless local area network (WLAN) technology based on the IEEE 802.11(b) standard. Wi-Fi systems and devices are deployed in the 2.4 GHz and 5 GHz frequency bands for wireless networking. Wi-Fi technology is generally used to connect PCs (or other appliances) to a local network. Wi-Fi cards have become standard accessories in laptop personal computers and are increasingly being integrated into personal digital assistants (PDAs) and mobile phones. Publicly accessible Wi-Fi “hotspots” have sprung up around the world to provide high-speed wireless access to the Internet. In many countries, Wi-Fi devices are used in unlicensed spectrum bands. Adapted from ITU Trends 2003 and Trends 2004.

<sup>26</sup> Many operators are now selling mobile internet products that link cellular wireless and Wi-Fi radio system in a more or less transparent way to take advantage of the benefits of both systems. Future wireless systems are expected to routinely switch between a variety of radio systems. <http://en.wikipedia.org/wiki/Wi-Fi>

<sup>27</sup> The World Interoperability for Microwave Access Forum (“Wi-Max”) is promoting a set of broadband wireless products that proponents claim will cover distances up to 50 km (with a typical cell radius of about 6 to 9 km).<sup>27</sup> The IEEE designers of the new WiMax 802.16a standard have ensured that the technology is largely spectrum-neutral. ITU Trends 2004.

<sup>28</sup> <http://en.wikipedia.org/wiki/Wimax>

that of Wi-Fi is measured in square meters.”<sup>29</sup> Thus, its ability to accommodate the challenges of distance is key. NRAs must take consider their spectrum licensing frameworks in light of the potential of WiMax to provide cheap, high-speed internet access. Unlike EDGE or GPRS, it requires a different licence in most jurisdictions, from traditional 2 G services.



**Wireless Technology Map<sup>30</sup>**

### 2.6.3 Satellite technology

Satellite systems, particularly very small aperture terminals (VSATs), have also recently been identified as a serious technology option to deploy services in rural and remote areas. Chile, Colombia, Ethiopia, Guatemala, Kazakhstan, Peru, South Africa, Thailand and other countries have made significant investments in VSAT technology. <sup>31</sup> VSATs can be used alone or can be integrated with small wireless systems to extend the reach of individual terminals to customers and villages in the local vicinity and thus to serve them more economically than with additional VSATs or with wire-based 'last mile' connections.

<sup>29</sup> According to WiMAX promoters, a WiMAX base station would beam high-speed Internet connections to homes and businesses in a radius of up to 50 km (31 miles); these base stations will eventually cover an entire metropolitan area, making that area into a WMAN and allowing true wireless mobility within it, as opposed to hot-spot hopping required by Wi-Fi. It should be duly noted that claims of 50 km (31 mile) range, especially claims that such distances can be achieved without [line of sight](#), represents, at best, a theoretical maximum under ideal circumstances. Source: <http://en.wikipedia.org/wiki/Wimax>

<sup>30</sup> Carney, Bill. Texas Instruments. Presentation: “WiMax and Wi-Fi Opportunities.” <http://www.wlanevent.com/presentations/2005/Wireless%20Broadband%20Day%202/417,19,Conclusions>  
Sourced : 31 May 2005.

<sup>31</sup> “Telecommunications and Information Services for the Poor: Toward a Strategy for Universal Access.” World Bank Discussion Paper No 432. April 2002. Pg.16.

VSAT-based solutions have been identified as flexible enough to grow as requirements increase and a combination of VSAT and terrestrial technologies, such as wireless local loop, can be used to accommodate a range of population densities. VSAT solutions include<sup>32</sup>:

- VSATs connected to subscriber lines to serve scattered populations/ remote and rural areas (< 20 lines)
- VSATs connected to wired or wireless/cordless local loop to serve clustered populations/dense urban areas (20-300 lines)
- VSATs connected to macrocellular networks to serve medium density populations (> 300 lines)

Although VSATs are a possible technology solution, over and above the challenges generic to rural telephony, VSAT-based solutions face the additional barrier of having to compete with cheaper terrestrial technologies such as copper, WLL and mobile wireless. Despite their cost challenges, if VSATs are used for more than basic voice, then they have several advantages<sup>33</sup>.

- **VSATs are scalable.** A VSAT can provide services ranging from low-bandwidth voice calls to high-bandwidth photos and broadcast-quality moving videos.
- **A single VSAT can support multiple connections.** As a result, a VSAT installed in a community centre can be used to support not just a kiosk, but also phone lines reaching villagers' homes — this alters the economics of rural telephony as the fixed cost of the VSAT is spread over multiple sources of revenue.
- **VSATs can have a number of ICT applications.** Small satellite antennas that can be used to receive TV signals and also offer broadband Internet access and Voice over Internet Protocol (VoIP), further driving ICT penetration and improving the economics of the business.

As with any technology, the costs and benefits of deploying VSATs would have to be considered before any decisions are made to utilise this technology. Some challenges that VSATs pose include the challenge of location in that the positioning of VSATs is sensitive; VSATs must be located in areas that are protected from the elements and that allow the VSAT a clear line of sight to the satellite in order to establish a reliable connection. As such, environmental considerations are important. VSAT technology is however one option which holds potential for the delivery of shared access to ICTs.

#### 2.6.4 Getting the tools/equipment for ICTs

Technology is meaningless if the equipment that enables users to access that technology is unaffordable, unavailable or inaccessible. With technological development, the tools or equipment needed to take advantage of the technology become key. The fact that ICT equipment (laptops, PCs, modems, WIFI cards, etc) is relatively expensive compared to traditional telecommunications equipment (telephone, cell phone) is important to note. ICT take up is thus inextricably linked to the development or availability of affordable ICT equipment.

#### 2.6.5 Regulation of Technology

Finally, the manner in which mobile has been regulated has been of significant impact – the introduction of competition in mobile markets, and a relatively light touch regulatory approach (as

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<sup>32</sup> [http://www.itu.int/ITU-D/pdf/fg7/ruraltel\\_itu.pdf](http://www.itu.int/ITU-D/pdf/fg7/ruraltel_itu.pdf)

<sup>33</sup> Bharadwaj, R. “VSAT solutions for rural telephony — Waiting to Connect” <http://www.thehindubusinessline.com/bline/2003/04/29/stories/2003042900060800.htm>

compared to fixed) has allowed innovation and competition to characterise mobile markets; thus delivering results for consumers. The boundaries between technologies have been found to depend to a great extent on<sup>34</sup>:

- The distance from the customers to the main network;
- The potential customer density; and
- The type of service (e.g., telephony and fax, or data; shared or individual)

Given the unintended, yet positive, impact that new technologies have had on the attainment of universal access goals, it is important that governments put in place policies that encourage technological innovation, and competition. The wireless revolution is an example of the private sector providing a solution to address the market efficiency gap. Governments should put in place frameworks that are sufficiently technologically neutral to facilitate development and thus universal access. These include transparent and fair frameworks for the licensing of spectrum (or the use of unlicensed spectrum), and for the licensing of services. The rest of this report assumes technology neutrality and thus expects that space will be left in the policy and legislative framework for technology to provide solutions where technically and economically feasible.

### **3 AUTHORISING & ENABLING UNIVERSAL SERVICE POLICY: THE IMPORTANCE OF ASKING THE RIGHT QUESTIONS**

This section describes the key questions that need to be answered on how to ‘authorise and enable’ universal service policy. It outlines the key considerations and decisions that should be pursued by policymakers and NRAs in the development of such policies; the principles and objectives the policies should serve; and the range of responsibilities and activities that should be assumed by the different participants in the process. Decisions on these matters will play a role in facilitating universal access/service policy.

In answering the key questions that will lead to the design of their universal service policies ECOWAS-UEMOA policy makers must refer to, but not place undue influence on, models adopted from developed countries. The differences in the market structures in developed countries such as OECD countries, and ECOWAS-UEMOA Member States, and the variation between their wider socio-economic structures and patterns are key. In this respect, even the definition of the ‘problem’ is different. It has been argued that:

“In African markets, the central problem for achieving universal service is limited effective demand which is a fundamentally different problem from that which existed in OECD countries when models of universal service were being developed. Even when policy makers in the OECD defined categories such as uneconomic consumers, including in this grouping consumers who could be provided with services only at a cost to the producer which exceeded averaged tariffs, the share of total consumers represented by this group was relatively small. In African countries with low levels of effective demand, using this definition would mean that the numbers of consumers designated “uneconomic” would be far greater than the existing or potential “economic” customer base. Clearly other notions to develop universal service policy objectives are needed for Africa.”<sup>35</sup>

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<sup>34</sup> “Telecommunications and Information Services for the Poor: Toward a Strategy for Universal Access.” World Bank Discussion Paper No 432. April 2002. Pg.17.

<sup>35</sup> Marcelle, Gillian M. “Universal Service in Africa: Solving the Dilemma,” Published paper for Session S.2. Financing Strategies getting the mix right between local and international investment, ITU Africa Telecom (1998)

In developing legislation, regulations and licence conditions on universal access/service, regulators and policymakers have to consider the impact of technological and market changes. NRAs and policymakers have traditionally pursued a regulatory approach to universal access/service that includes answering the follow strategic questions:

- Where should universal access/service policies and strategies be situated in the communications framework?
- How should universal access and universal service be defined (to fit the local context)?
- What are the objectives of universal access/service policy?
- Who should bear the responsibility for universal service?
- How should affordability be determined?
- How should universal access/service goals be implemented and financed?
- How should the NRA verify Universal Service Obligation (USO) costs? and
- How should progress be measured and reviewed?

These questions are amongst those expanded upon more fully in the sections which follow.

### **3.1 Where Should Universal Access/Service Policies and Strategies be Situated in the Communications Framework?**

In order to ensure that universal 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 and are given a space in the national policy and legislative frameworks. **Universal service policy should therefore, as is the case in most countries, 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.<sup>36</sup>

- Universal service goals are enshrined in the ‘Directive of the European Parliament and of the Council on Universal Service and Users’ Rights Relating to Electronic Communications Networks and Services’ (the Universal Access Directive) in the EU. The EC Interconnection Directive and its ONP Voice Directive provide a framework for universal access/service policy as well.
- In the **United States**, the 1996 Telecommunications Act indicates that the provision of universal service is a joint federal and state responsibility and it directs the FCC and the states to establish the appropriate support mechanisms. State regulatory agencies have the authority to impose universal access/service programmes that are consistent with broad FCC policy. Nevertheless, it is important to note that the creation of distinct state universal service funds has never been mandated either by Federal legislation or FCC orders.
- In **South Africa**, universal access/service is defined as a key objective of the Telecommunications Act (1996). A Fund is created by the Telecommunications Act; regulations are in place regarding contributions to the Fund; and fixed and mobile licenses conditions include mandatory obligations.
- Part 2 of the **Australia’s** Telecommunications Act (1999) sets out the broad universal service regime and the universal service obligation (USO)

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<sup>36</sup> ITU Trends 2003, Chapter 3, paragraph 3.4.

- In **Nigeria** the Communications Act (2003) makes provision for universal service through the identification of underserved areas and groups, the establishment of a Fund, and the provision of regulation-making powers to the Nigerian Communications Commission (NCC). Universal service is thus dealt with in section 112 to 120 of the Communications Act.<sup>37</sup> .

### **3.2 Why Develop Universal access/service Policies: The Objectives**

The reasons for pursuing universal access/service policies are varied. Governments promote and implement such policies and programmes in an attempt to meet several key goals which are unique to each country. Thus, every country should ask why it is developing universal service and access policies? What does it seek to achieve?

Aside from the widespread benefits of the services themselves, telecommunications and ICTs are a critical means to accelerate and support social and economic development. Telecommunications and ICT services form a base for, and facilitate access to, other critical resources and tools for development, including health, education, agricultural extension services and water resources.<sup>38</sup>

Thus, the objectives that governments seek to achieve through development and implementation of universal access/service policies as articulated by a number of sources and echoed in the 2003 ITU Trends in Telecommunications Reform Report and infoDev's Telecommunication Regulatory Handbook are instructive.<sup>39</sup> It should be noted that these objectives are generic and may vary from country to country. The objectives of governments include:

#### **3.2.1 The promotion of full participation in information society**

Given the importance placed on ICTs in social and economic development globally, governments recognise the acute risks of allowing the current narrowband divide to grow into a broadband divide. ICTs are used locally and internationally for more than just business and personal purposes, but for the delivery of a wide range of social services as well. Those without access risk being further marginalised in the information society.

#### **3.2.2 The promotion of efficiency and growth**

The incomes of poor people grow faster in communications-enabled economies. Telecommunications has also been linked to economic growth. In the last few years, a faster income growth rate has been shown in the poorest 20 per cent of the population in countries where the telecommunication sector is delivering its full potential to the economy, more specifically, where telecommunication revenues equal 2-3 percent of gross domestic product (GDP). Furthermore, telecommunication access encourages the development of infrastructure and the growth of networks. Thus a key objective of governments is the use of telecommunications to promote efficiency and growth and ultimately economic development.

#### **3.2.3 The promotion of political and social cohesion**

Access to ICTs assists governments in ensuring that citizens living in rural and remote communities are also in a position to participate in the nation's political, economic and social development.

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<sup>37</sup> Idehen, Efosa V. Nigerian Communications Commission. "Universal Access/Service in Nigeria." March 2005.

<sup>38</sup>ITU Trends 2003, Chapter 1.

<sup>39</sup> See Telecommunications Regulation Handbook Universal Services/Access (Module 4), ed. Hank Intven (2000) ,<http://www.infodev.org/projects/314regulationhandbook/>.

### 3.2.4 The delivery of government services

Access to telecommunication and ICT services leads to increased efficiency and effectiveness of government departments, and thus to improved delivery of public services such as health and education.

### 3.2.5 The elimination of disparities

The gap between populations that are “rich” in access to ICT offerings and those who lack such access can manifest itself in several ways. It can be a geographical divide between rural and urban users, for example, or it can be an economic gap between lower-income and higher-income citizens. In **Uganda**, for example, 80 percent of Ugandans live in rural areas, but an estimated 70 percent of ICTs are in urban areas. While urban Uganda benefits from ICT development, rural areas remain far behind and still have difficulty in addressing health, education and nutritional needs.<sup>40</sup> Narrowing or eliminating gaps of this nature is often a core objective of governments that implement universal access/service policies.

The five objectives that have been highlighted are illustrative and not exhaustive; however, they represent a broad cross section of reasons for which national governments often decide to play an active role to ensure the successful attainment of universal access and/or universal service goals. Once their objectives have been defined, governments may also feel that all relevant players in the market must assume the responsibility for implementing universal access/service policies and programmes, particularly where there is a competitive environment with several operators. Thus the question posed is *who* should bear the costs and responsibility for meeting these objectives? One must consider the economic case for universal service in order to answer that question.

## 3.3 The Economic Case for Universal Access and Universal Service

Universal access/service policies are often premised on the belief that the provision of service in rural and remote areas is expensive and, therefore, unprofitable. They are further based on the idea that low-income users will not be able to get access to the telecommunications network without at least some level of assistance from the government. While government involvement in the attainment of universal access/service is key, it is not necessarily the role of government to fund or deliver network to citizens per se. **It is true that universal access/service brings strong economic benefits to nations as well as financial benefits to investors/operators if it is consistent with market forces and, in fact, increases the economic viability of existing networks.**

However, universal access and universal service are good not only for government in that they meet the above-mentioned objectives and deliver services to citizens, but they are good for communications businesses as well. Universal service grows the communications market. By connecting additional customers to the network, not only can more customers buy the services of telecommunication providers, every additional customer increases the inherent value of the network.

So if it is acknowledged that the benefits of universal access/service will accrue to governments, communities and operators, **then the responsibility for meeting these objectives should be borne by all parties.** Once governments acknowledge that the impact of universal access policies can be positive for business as well as citizens, it enables a paradigm shift with respect to how universal service is treated. Universal service can then be seen as an opportunity and not as an obligation, which changes the way in which it is approached and implemented.

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<sup>40</sup> Gamururwa, A. “Uganda: A Success Story?” Background to the Government of Uganda Budget 2001/02.

### 3.4 How Is Success Measured? The Dimensions of Universal Access/Service

The concept of universal access/service is multifaceted, and the term embraces several different dimensions. Countries seek to achieve universal access/service on various levels which should be taken into account in both developing universal access/service policy and later, in measuring its success. The three main dimensions as 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.

In the past, the decision in many countries to maintain state-owned telecommunication monopolies was driven by universal access/service goals in all three dimensions. Many policy-makers believed that a public, monopoly operator would be in the best position to build telecommunication networks effectively ( without siphoning off undue profits) and would make services available to citizens at equitable prices thus addressing availability, affordability and accessibility.

Monopoly operators were expected to meet universal access/service targets set for them, in exchange for the granting of periods in which they could continue to enjoy exclusivity in the market. Whether this was the best approach for governments to follow is now questionable. One of the motivations for more recent privatisation policies has been the fact that incumbent operators have exhibited a lack of success in rolling out adequate infrastructure after decades of monopoly.<sup>41</sup>

Past practice has taught policymakers that universal access/service policy must seek to address all three dimensions of universal service – availability, affordability and accessibility. It also must take advantage of technological innovation and go beyond relying on a fixed line monopoly to do this.

### 3.5 Defining Universal Service and Access: Adapting Generic Universal Service Definitions to the Local Context

Broadly, the concept of universal service refers to personal/private ownership targets, and universal access refers to public access targets. In most developing countries, universal access is sought before universal service, although they may be pursued in tandem.

The precise definitions of universal access and universal service are not captured in the policy discourse as their content, or definition, and the implementation of policy may vary depending on a given country's specific social, economic and political needs. In fact, in order to be effective, universal access/service policies must be sufficiently elastic to adapt to specific markets and the changing needs of the country in which they are to be applied. In this way, there is a definite correlation between local economic and sector conditions and universal access/service definitions, including specific targets for dates and service levels.

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<sup>41</sup> Gillwald, A. "Policy and Regulatory Challenges of Access and Affordability."

Bearing in mind that each country has to define universal access and universal service for itself, a robust definition of universal service and/or access should include:

- **Types of access:** Goals for individual (or personal) service and community (or shared) access should be made clear; and
- **Types and quality of services:** Goals with respect to what services are being targeted (e.g. voice, voice and data, mobile or others)

### 3.5.1 Defining Measurable Goals for Types of Universal Access

NRAs and policymakers should try to set measurable targets for access. Most developing countries initially set universal access targets, as opposed to those dealing with universal service. Access is a more practical and readily achievable goal. The first qualitative measurement usually stems from an examination of fixed line teledensity figures, however where mobile figures are available they should also be used given the impact of mobile in Africa. Regulators measure the difference between the current service penetration and the achievable level of penetration in a liberalized market this will assist in identifying the market efficiency gap.

How do governments define the relevant targets to address the access gap? **Across the world, national universal access targets are often defined in terms of distance, population or time.**

This is different from service targets which will be described in the next section, and are measured per person or per household. In Benin the universal access/service framework clearly sets access as an initial goal, and indicates that an objective of government is to “ensure that they (citizens) would not have to travel long distances.”<sup>42</sup> The challenge is to move this broad goal into a specific measurable target. For example, the goal of Grameen Telecom in Bangladesh is to have one accessible telephone within a 10-minute walk for every rural villager. Where populations are dispersed, and access refers to telephone service within a certain distance from a community, this is typically measured by the length of time required for a community member to walk to a telephone 2-5 kilometres outside their community. Using regional ECOWAS-UEMOA benchmarks, in Burkina Faso, for example, a public telephone should be installed within a radius of 2 km in the urban and rural areas.<sup>43</sup> In addition to distance-based targets, targets are also expressed in terms of public payphones per capita, telephones per village or similar measurements. These targets, once defined, can be written into various policy instruments (eg regulations, or licence conditions).

#### **Recommendation**

- All communities of over 200 inhabitants should have telecommunications facilities in their localities.
- Public telephones should be installed so that no citizen should have to walk more than 3 kilometres for phone access.
- Regional teledensity of 3 percent (fixed) and 7 percent (mobile) to be achieved by 2008.

*Note:* as agreed at the Validation Workshop on Universal Access/Service, held in Abuja, Nigeria, 28-30 September 2004.

<sup>42</sup> Order No 2002-002 of 31 January 2002, Article 1. Akue-Kpakpo, Abossé (2004)

<sup>43</sup> Akue-Kpakpo, Abossé (2004)

### Defining Access

- **Distance:** a phone within X km of all residents;
- **Time:** a phone within an X-minute walk of all residents;
- **Population:** a phone for every community with a specified minimum population.

### 3.5.2 Defining Measurable Goals for Types of Universal Service

Universal service is a target of most developed countries, and many developing countries. As discussed earlier, it refers to availability of the *basic* service for private (household or personal) use. “Basic” access to telecommunication services has always been the target of universal access/service policy, but quite deliberately, the meaning of the term has never been expressly defined. **The definition of “basic” has to be understood to be evolving, because it has to be defined differently, by different countries, at different points in time.**<sup>44</sup>

In a sector such as the ICT sector, it is dangerous and even counterproductive for governments to define the minimum basket of services to be included in the ambit of universal access/service policies based on the fact that such services are technologically available. The definition of “basic” should take into consideration the economic requirement to provide adequate and efficient service for the public convenience.<sup>45</sup> Thus, like technology, “basic” will evolve. It is the role of regulators and policymakers to determine the targets for types of services to be provided through universal access/service programmes and policies, bearing in mind the local socio-economic situation. This will affect the development of technology in a given country and the speed at which technologies are adopted.

**How do governments and NRAs define basic?** Due to varying levels of development, different countries have taken different approaches to defining the minimum basket of services that should be included in their universal access/service definitions. By the 1990s, the basic level of service in most developed countries was voice-grade access to the public switched network, often known as plain old telephone service, or “POTS”.<sup>46</sup> In many of these countries, this definition included access to emergency, operator and relay services.

In developing countries, “basic” service often refers simply to single-line voice grade service, but the definition is evolving as technology develops and countries come closer to reaching their goals for voice service availability. 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.”<sup>47</sup>

Recently, with the growth of the Internet and of broadband access service, governments are exploring ways of incorporating Internet access in the basket of basic services included in the universal access/service definition. More and more regulators are looking at including advanced

<sup>44</sup> ITU Trends 2003, Chapter 1.

<sup>45</sup> <http://www.benton.org/publibrary/uniserv-prospective/notes.html#note55>, May 2003.

<sup>46</sup> Jock Given, *Universal Service in Telecommunications: Old Objectives, New Strategies*, Institute for Social Research, Swinburne University of Technology.

<sup>47</sup> Ghanaian Policy Declaration Paper Draft Telecommunications Policy Declaration dated 8 June 2000. Akue-Kpakpo, Abossé (2004).

services in the definition of basic. These services include both narrowband and broadband access (depending on the level of development). This is an important consideration given that ICTs are becoming more important in society. In evaluating whether to include advanced services, NRA's should take into account the critical policy considerations such as the cost of providing such services, the difficulty in determining minimum speeds and the increased importance of quality of service in order to gain meaningful access, and standards. In India universal access/service targets include the provision of telephone and low bandwidth data services in all underserved villages, and providing internet access in all district administrative centres. By August 2003, 504 000 of India's 607 491 villages had basic telephone and low-bandwidth data transmission services.<sup>48</sup>

In summary, governments have recognized the **need to adapt their universal access/service definitions to take into account developments in the broader communications sector. Regulators need to recast traditional definitions, moving away from a telecommunications-focused paradigm to one that addresses the whole ICT sector.** The increase in the reliance on ICTs, including broadband service, internet, and email, will require a heightened focus on issues of quality of service (QoS).

### **Example of Universal Service Definition**

Section 254(c) of the United States Telecommunication Act, as amended in 1996, seeks to make available services that are both "essential" and widely used<sup>49</sup>:

#### **Definition**

- (1) In general.—Universal service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services. The Joint Board in recommending, and the Commission in establishing, the definition of the services that are supported by Federal universal service support mechanisms shall consider the extent to which such telecommunications services—
- (A) are essential to education, public health, or public safety;
  - (B) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;
  - (C) are being deployed in public telecommunications networks by telecommunications carriers; and
  - (D) are consistent with the public interest, convenience, and necessity.

### **3.6 Determining Affordability**

If a key goal of universal access/service is to provide telephony at reasonable rates, then it is important for regulators and policy-makers to answer the question; **"what is reasonable or affordable?"** This has to be defined on a country by country basis.

Affordability is a function of two things – the price of the service, and the ability of a household to pay for it.<sup>50</sup> Defining affordability can be a major challenge. The main difficulty is that both the

<sup>48</sup> Akue-Kpakpo, Abossé (2004).

<sup>49</sup> Service [http://people.hofstra.edu/faculty/frank\\_g\\_bowe/Definition.html](http://people.hofstra.edu/faculty/frank_g_bowe/Definition.html)

<sup>50</sup> Office of Utilities Regulation, Jamaica. Toward Universal Service/Access Obligation for Telecommunication Services in Jamaica: A Consultative Document (2002). Pg 16.

cost of providing services and the incomes of subscribers differ considerably from one region to another, and even within one city.

In order to develop a definition of affordability, governments will have to look at quantitative measurements of affordability. This will involve estimating the percentage of income that households might be able or willing to spend for service at various income and rate levels. Qualitative measures include surveying people on what they think is “too expensive” or “too much” to pay for telephone service.

It will be necessary, as proposed by Jamaica’s Office of Utilities Regulation (OUR), for NRAs to take into consideration at least four key factors:

- Current consumer spending – this will have to be analysed for the various segments of the population, from the poorest households to the wealthiest;
- Overall expenditure on utilities – an analysis will have to be done on how much of its disposable income an average family spends on buying utility services;
- Cross subsidies and rate rebalancing – rate rebalancing may have implications on lower income families; and
- Competition – market efficiency vs. market access gap

### 3.6.1 Tariffs and Affordability

The market efficiency gap and affordability are dealt with by regulators when considering tariffs and interconnection. The level of tariffs (i.e., prices) charged by operators affects whether consumers can afford services and helps determine usage levels. It is therefore important for regulators and policymakers to consider carefully their tariff regimes, particularly the balance between installation charges, monthly rental fees and local and long-distance call charges.

Rate rebalancing, the strategy through which operators align their prices more closely with costs, has affected retail telecommunication rates and, by extension, the level of usage of those services. In many countries, the elimination of cross-subsidies between local and international calls has resulted in local charges increasing, while international tariffs have been reduced, resulting in an overall decline in prices. The immediate impact is felt more by lower income families, who generally have a higher domestic call rate than wealthier households. Notwithstanding the positive relationship in the long term between rate rebalancing and teledensity, the immediate negative impact on lower income groups appears to hamper universal service efforts. **This has led to calls to, rather than merely dismisses the notion of cross-subsidies, explore means in which they can be replaced by alternative subsidies delivered in a transparent manner which are not anti-competitive.**<sup>51</sup>

If governments decide to go the subsidy route, they must consider whether they will play a role in providing subsidies. If not, they have to decide **what other sources the subsidies can come from** (See Section III)? If so, they have to decide **which categories of persons and/or services should be subsidised and to what extent?**

### 3.7 Making Subsidies Work

Once a decision to provide subsidised services has been made, policy-makers and regulators must determine which categories of persons or service are eligible to receive and use such subsidies. History has taught regulators and policy makers that a policy of untargeted subsidies can be inefficient, because it does not focus assistance on those who actually need it. In many instances

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<sup>51</sup> Gillwald, A. Policy and Regulatory Challenges of Access and Affordability.

where monopoly operators were relied upon to provide universal service, their impact was lessened by the fact that the subsidies they provided were untargeted. Untargeted universal access schemes are prone to misdirected subsidies and therefore have great opportunity costs.

Targeted subsidies, on the other hand, can potentially keep all subscribers on the network in a more efficient manner. They must be provided in a manner that is **transparent, non-discriminatory, inexpensive, and competitively neutral**. Three broad categories of people are considered eligible to receive subsidies – (1) operators; (2) users or consumers; and (3) designated projects that provide access. Part V of this report focuses on the issue of financing universal access/service, and includes a detailed discussion of subsidies.

## **4 UNIVERSAL ACCESS AND SERVICE POLICIES AND STRATEGIES**

How have regulators and policymakers sought to implement national access targets and affordability goals, once these have been defined? Once regulators and policymakers have successfully addressed the questions in Section III, the foundation is in place for the designing of universal service policies. The policy approach followed will in many ways be shaped by the ways in which questions in the previous section were answered. Broadly, two types of universal access/service policies have been pursued – one based on obligations (“pay”); and the other based on incentives (“play”). A combination of the two is also evidenced in many countries with varying levels of success (“pay and/or play”).

### **4.1 Imposing Obligations: The “Pay” Option**

On one hand, governments can impose performance requirements or levies on operators, essentially directing them to pay the costs of providing universal access or universal service. In the ‘pay’ category of policy options, NRAs have developed several mechanisms to apply universal access/service obligations upon carriers. These are traditional ‘command and control’ strategies employed by regulators which have had mixed results. These include:

- licence conditions or obligations; and
- designating a Carrier of Last Resort (COLR)

Each will be discussed in turn. One policy option does not need to be adopted at the exclusion of others. In many cases, in fact, a combination of several policy options has proven more effective.

#### **4.1.1 Licence Conditions**

The earliest form of universal service policy instrument in the telecommunication sector were licence clauses specifying universal service obligations (mandatory service obligations) placed on an operator. The imposition of these licence conditions was based on the policy conclusions derived from the economic analysis of monopoly markets. Universal service obligations were seen as a means of ensuring that public monopolies did not artificially restrict supply levels. Imposing universal service obligations remains one of the most common means used by regulators in implementing universal service programmes.<sup>52</sup> This approach places the responsibility for financing the programmes squarely on the operators and can be successful if the obligations are realistic and not anti-competitive in nature. From a regulatory perspective it is an easy policy option to take in terms of imposing and monitoring the obligation. Responsibility for implementation rests with the licensee.

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<sup>52</sup> Marcelle, Gillian M. “Universal Service in Africa: Solving the Dilemma,” pg 1.

The level of USOs can be determined by the NRA through the imposition of similar conditions on similar licensees. Alternatively, although a bit of a deviation from a pure ‘pay’ strategy, USO can be a part of the selection criteria when a licence is awarded in a competitive process, or ‘beauty contest.’

There are broadly three types of conditions that are captured in licenses with respect to universal access/service.

- One type of licence is an exclusive licence. This type of licence condition involves a trade-off wherein an operator is granted an exclusive licence for a defined period of time, in exchange for a commitment to meet national universal access/service targets. This exclusivity can be granted nationally or regionally. **South Africa**, for example, granted a five-year national exclusivity period to the fixed-line operator, Telkom SA, with an option to extend for a year if universal service targets were met. In return, Telkom SA was obliged to roll out a total of 2.69 million new main lines (excluding public payphones). In the ECOWAS-UEMOA region, **Niger** awarded an exclusive licence to SONITEL in 1996. Moreover, 1.67 million of those lines had to be in disadvantaged areas. In **Argentina, Brazil and Hungary**, meanwhile, exclusive regional licences were granted to operators in exchange for obligations to address universal access targets.
- A second type of licence condition, in a competitive environment, involves the incorporation of USO, network build or rollout obligations in the licences. In terms of these obligations, licensees have to provide identified services to certain categories of subscribers. Other license obligations imposed on operators in a competitive as well as a monopoly market include requirements to install public payphones (on a technology neutral basis), requirements to reduce waiting lists, and requirements to meet quality-of-service targets. For example, **South Africa’s** mobile operators have obligations to put mobile payphones/phoneshops in underserved areas. As the definition of basic evolves, so the types of obligations placed on operators. Rather than provision of payphones, operators may, for example, be required to provide internet access at schools or libraries. Alternatively, they may be required to provide multi-media payphones or multi-purpose community centres with certain levels of quality.
- Finally, population and geographic targets included as conditions in licences can be seen as tools to increase universal access/service. Population and geographic targets are seen in almost all licences and provide operators with a certain amount of time to rollout to a certain percentage of the population or region.

### Examples of Licence Conditions<sup>53</sup>

Licence obligations/mandatory service requirements can be presented in the form of:

- rollout targets for private lines,
- teledensity targets,
- targets for public facilities such as pay phones or phone shops,
- quality of service levels,
- targets to reduce waiting list, or
- minimum time to fulfill requests for a fixed line.

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<sup>53</sup> Information and Communications Technologies: A World Bank Group Strategy, 2002, pg 29.

### 4.1.2 Carrier of Last Resort

Another ‘pay’ option is the imposition of a general obligation to provide service to all customers willing to pay regulated rates for service in high cost areas. This obligation may be limited to certain geographic or population groups, such as a requirement to serve all urban areas, or to serve rural areas above a certain population. Operators assigned this type of obligation are commonly called “carriers of last resort” (COLR). Generally, the COLR in a given market is the incumbent operator. This is the case in **Cape Verde**, where the incumbent CV Telecom is required to service any locality with more than 200 inhabitants.

Depending on whether the prices charged by operators to meet their rollout obligations are cost-oriented or not, the obligation to serve certain customers or certain geographic areas may not be economical for the COLR, and the COLR may incur losses for some services and/or for some geographic markets. These losses have often, contrary to international best practices, been financed by cross-subsidies (as will be explored more fully below). It has since be recognised that should such an approach be taken, subsidies should be awarded in a similar manner as they are for other operators who are targeted as recipients of subsidies for delivering service in high cost areas (e.g. regional operators who may access the USF, see paragraph 5.3.1) Alternatively, a competitive bidding process can be undertaken; although the incumbent operator would still be the USO provider of last resort if no competitive bids are made by competitors.

## 4.2 Universal Service as an Opportunity (‘Pay and/or Play’)

There is a certain amount of safety and reliability in “pay” policies discussed in section 4.1 which impose licence obligations, or performance requirements as a condition for providing service. However, companies can also be induced to help provide universal service in other ways. Instead of imposing mandatory obligations, governments can provide incentives for operators to provide universal access/service on their own. 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<sup>54</sup>, 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)

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<sup>54</sup> For example, People’s Republic of China.

#### 4.2.1 Micro-Credit Programmes

This strategy recognises that constructing and maintaining networks in rural areas has high up-front costs, which can be covered using micro credit loans or development bank financing. Rather than getting financing from commercial lending institutions and other sources of traditional financing (whose processes and lending rates are designed for mainstream telecommunications firms, and who currently have a reduced risk appetite, in particular in developing countries), this strategy links existing successful ‘micro credit’ organizations with rural telecommunication operators. This relationship between rural operators and micro credit organisations allows communities to participate actively in rolling out network infrastructure and expanding coverage in rural areas. While this strategy assumes the prior existence of micro-credit organisations, development bank financing can also be used.

Micro credit loans are provided on terms that are more beneficial to the borrowers and can be repaid once the ICT business is developed and has started making positive returns. Small loans to rural entrepreneurs are strong features of the notable Grameen Phone and the Bangladesh Rural Advancement Committee (BRAC) business ventures, both in **Bangladesh**. These micro-credit loans can effectively enable new ICT operators to establish local telephone companies, which can provide a variety of telecentre and multi-purpose community centre (MPCC)- type services, including telephone, fax, e-mail, Internet access, photocopying and word-processing.

#### 4.2.2 BOT and BTO Arrangements

Governments can provide concessions to equipment vendors and/or operators who rollout infrastructure in rural areas. These operators then operate the networks for a fixed period of time before transferring the operation to an incumbent national operator and/or other local investors.<sup>55</sup>

Experience in some countries that have implemented BOT strategies, suggests that BOT may address immediate infrastructure needs, but it is not a viable strategy in the long term. This is due to the fact that investors in BOT projects do not have a commitment to the project given that there are no long-term equity interests in it. They are therefore motivated to “maximise short-term profitability at the expense of long term network or service development.”<sup>56</sup>

#### 4.2.3 Cooperatives and Community-Owned Networks

Where they exist, cooperative organizations (co-ops) active in rural areas (for example, electrical or agricultural cooperatives) may be able to take advantage of incentives or subsidies to provide or finance service in low-income rural areas. Alternatively co-ops can be developed to deal primarily with telecommunications. Through co-ops, community members are placed in the unique position

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<sup>55</sup> This model has been implemented in Indonesia where five regional operators were licensed on a BOT basis. In Thailand, investors were encouraged to build new facilities through BOT schemes. In the Thai case, investors funded the network, operated it and received a percentage of the revenues for a specified period before turning it over to the government. (ITU Trends 2003, Chapter 2.)

<sup>56</sup> NetTel@Africa Off-Line Content. <http://cbdd.wsu.edu/kewlcontent/cdoutput/TR503/page64.htm>

of being shareholders of the service provider and therefore are directly involved in the delivery of services.<sup>57</sup>

Like many rural small business, co-ops face funding challenges, and have had difficulties upgrading and modernizing their systems adequately. Should a cooperative scheme be put in place, it is important that coops be identified as beneficiaries of subsidies.

#### 4.2.4 Regional Operators

In this scenario, the government identifies underserved areas (see Paragraph 1.5, Market Efficiency Gap vs Access Gap) and awards regional licences to encourage the speedy rollout of networks and services in those areas. Regional licences fit well with sector reform, liberalisation and the introduction of competition and can be offered in both competitive and monopoly environments. The NRA can take one of two approaches – they can:

- provide the operator an **exclusive regional licence** to provide services in their designated region;<sup>58</sup> or
- **allow competition in the area** by permitting other operators to rollout networks in those areas (although the assumption is that traditional operators would not otherwise have a strong presence in that region due to commercial unattractiveness).<sup>59</sup>

In addition to their geographic isolation, an underserved region should also be identified based on the presence of all or some of the following indicators<sup>60</sup>:

- **It is not served (or is underserved) by telecommunications, including basic voice service.** This can be objectively measured by considering only areas whether the teledensity is below a certain threshold. Thus where teledensity (fixed and mobile) is less than X percent (in **South Africa** five percent is the cut-off and refers only to fixed teledensity) the area will be considered under served;
- **Its population is predominantly characterized by a low per capita income.** If the area is poor, and therefore there is an inability to pay for services it can be considered under served. Affordability can be measured as per paragraph 3.6 of this report; and

If the scope of a country's universal access/service definition includes enhanced services, despite the fact that the above-mentioned indicators relating to infrastructure and affordability may be met,

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<sup>57</sup> Poland and Bolivia represent interesting case studies with respect to co-ops. In Bolivia an amended telecommunication law was passed in 1995 which afforded co-ops exclusivity to operate in their markets. Local telephone service in Bolivia was then offered by local cooperatives instead of a single national carrier or private, investor-owned companies. The three largest co-ops, located in La Paz, Santa Cruz and Cochabamba, control almost 86 per cent of the country's local telephony. These cooperatives were given a six-year monopoly in exchange for agreeing to upgrade their telecommunication infrastructures.

<sup>58</sup> This was the case in Bangladesh.

<sup>59</sup> In Chile and Venezuela, rural licensees operate in such a competitive environment. In 2001, South Africa passed a telecommunications law which provides for 29 rural or under-served area licences (USALs) in areas with less than five per cent (fixed line) teledensity. However there is competition from mobile operators in these areas, and there are no restrictions on the fixed line operators to rollout in such areas, although historically there has never been any incentive for them to do so.

<sup>60</sup> Adapted from Currie, W. "E-Strategies and the World Summit on the Information Society" APC, May 2004.

governments can also issue regional licenses based on the goal of developing access to ICTs. In such cases, the following indicators may be used:

- **it is not served (or is underserved) by ICT services, including broadband services.** This can be objectively measured using indicators, such as internet penetration or number of PCs;
- **radio and television coverage is limited to one or two services;**
- **lack of capacity to utilise ICTs.**

The challenge presented to co-ops and local, community-owned operations is the need for local expertise and funding, which may not be readily available in the areas being targeted. Recipients of rural licenses face large up-front costs for infrastructure rollout. Therefore, the Fund can be used as a means of providing partial subsidies to these operators if they are pre-identified as a relevant and eligible category of beneficiaries. An alternative financing method is special low interest loans provided by governments to encourage operator rollout.

### **Creating and Enabling Legal and Regulatory Framework for Regional Licensees**

A good licensing framework for regional operators is the key to their success. An important regulatory strategy to facilitate successful regional underserved area licenses is to allow barrier-free entry for small entrepreneurs. This means that NRAs should recognise that some of the regulatory hurdles that exist in served areas may impede development and investment in underserved areas.

Regulatory considerations include<sup>61</sup>:

- **Reducing the fees for providing services.** Large up-front licence fees and performance guarantees that are normally sought should be waived or reduced for regional underserved area licensees. This should be done without compromising quality of service (QoS) standards.
- **Lowering the network rollout obligations.** Standard basic service licences often require that certain network build-out levels are met. For instance, they might require operation across an entire province or state and be accompanied by certain service coverage thresholds for rural areas. Since regional licences are designed to apply solely in underserved areas (many of which are rural), and to support micro and small enterprises as operators, such service-area requirements (obligations) would not make sense for regional licences.
- **Waive contributions to the Fund.** Regional under served area licensees should be one category of licensee that is exempt from contributing to the Fund. Since they are contributing ‘in kind’ to the provision of universal service this is a sensible approach. In fact, to encourage them they can be made beneficiaries of the Fund under defined conditions.<sup>62</sup>
- **Waive any restrictions on the use of technology.** These licenses should be able to use whatever technology it takes to get services to the people. This approach allows for the adoption of new and low cost technologies.<sup>63</sup>

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62 In South Africa USALS are eligible to receive a R15 million (approximately US\$ 2.5 million) grant to spend out on infrastructure.

63 In South Africa the USAL must only pay a nominal fee of ZAR1 for access to spectrum to be used in their designated areas.

#### 4.2.5 Telecentres and MPCCs

The concept of public-private partnerships to design and fund community telecentres is a classic universal *access* strategy. It has been found to represent a relatively easy means of making tools of the information society (phones, faxes, PCs, etc) widely available. Telecentres and MPCCs can play a critical role in providing access to more than just the tools, but to education and health services, amongst others. There are various funding options for these centres, as they can be commercial, not-for-profit, or hybrid operations. Telecentre projects, if properly motivated, can also be candidates for subsidies from the USF. Extensive literature exists on telecentre design and funding, but key issues that must be taken into consideration are<sup>64</sup>:

- a bottom-up approach, in which small businesses such as phone and office service shops are encouraged to develop an ICT component in response to market opportunities, perhaps with the inducement of micro loans for computers and Internet access;
- business-community partnerships, with donor or NGO assistance, to complement rather than compete with successful small phone shop and telecentre businesses; and
- policy initiatives to encourage both the rollout of affordable and suitable quality Internet service outside the main urban centers, and
- the permission and licensing of the use of appropriate technologies such as wireless, or very small aperture terminals (VSATs) by access providers.

### 5 FUNDING UNIVERSAL ACCESS/SERVICE

The above-mentioned universal access/service strategies can only be effective if they are properly financed. Subsidies are meant to cover the difference between the costs of supplying a service and the revenues made in supplying such service, and may be justified to narrow access gaps. Not all universal access/service strategies require subsidies. In fact, where they are provided subsidies should be a short-term measure used to initiate projects and not to maintain them. **It is recommended that a case be made for the receipt of subsidies before they are allocated.**

In the case of pay obligations, subsidies have historically been obtained from two sources which have been proven not to be competitively neutral – internal cross subsidies and access deficit charges. These funding strategies may be effective, albeit inefficient, in non-competitive environments, but they are difficult to manage and therefore not sustainable once competition is introduced. As such, transparent and competitively neutral approaches to subsidising universal access/service have been sought. Universal access/service funds are one such means. These three forms of subsidies will be explored in greater detail below.

#### 5.1 Financing Universal Access/Service in Less Liberalised Markets

##### 5.1.1 Cross-Subsidies

Historically, the international trend was for incumbent fixed-line operators to fund universal access/service through internal cross-subsidization, which involved the use of surplus revenues earned in profitable market segments to cover losses on non-profitable services. Monopolies bore the cost of internal cross-subsidies and invested to establish a critical mass of capital equipment and technology. Cross-subsidization was used in regulated monopoly markets to fund the installation of access lines and to maintain low prices for local loop services. The impact of such

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<sup>64</sup> Information and Communications Technologies: A World Bank Group Strategy, 2002, pg 10.

practices was, for example, that business firms subsidised households, long distance calls subsidised the local calls, and urban areas subsidised rural areas.<sup>65</sup>

But it has been found that such practices are inefficient and distort investment and consumption and are therefore not sustainable in competitive markets. Furthermore cross-subsidies are not transparent, in that it is difficult to determine who receives the subsidy and where it comes from. Finally, with cross –subsidies, operators have less incentives to reduce costs in the high cost areas or provide better service to the low income users. While a distortion in price and cost increases consumption, it also decreases the supplier’s incentive to provide service.<sup>66</sup> These factors contribute to global trends to phase out cross-subsidies in most jurisdictions.

New entrants typically target profitable market segments, such as domestic and international long-distance offerings. These are, of course, the very segments that traditionally have been the source of cross-subsidies that make low-cost access to the network possible. It is impossible in a competitive market to maintain inflated prices as the sources of cross-subsidies; competitors will inevitably undercut them.

For that reason, cross-subsidization is now largely discouraged. However, the phasing out of cross-subsidies at the same time that rate rebalancing is occurring has been found, in developing countries, to have an immediate negative impact on some of the elements of the population that have been identified as ‘high risk.’ The rejection of cross-subsidies therefore, does not negate the fact that there remains a need to subsidise certain segments of the populations. Targeted subsidies have been found to be a more effective approach.

### **5.1.2 Access Deficit Charges**

Some universal access/service policies are designed to compensate operators for their “access deficit,” that is, where a designated or incumbent operator bears the obligation to provide local services to certain customers at prices below cost. Unlike in the COLR scenario where operators fund their rollout through traditional cross-subsidies which divert revenue flows internally, these operators recoup the costs of funding their access deficit from other operators, thus the “access deficit charge” (ADC). ADCs are often collected from other operators in a manner similar to interconnection charges, in that they are collected on a per-minute or per trunk basis. They are sometimes collected as a levy on operator revenue. Whatever method is used, telecommunication policy experts advise that they not be bundled together with standard interconnection charges.

## **5.2 Financing Universal Access/Service in Liberalised Markets**

### **5.2.1 Universal Access/Service Funds**

In competitive environments where several operators are responsible for universal access/service provision, the costs, including rural expansion, can be financed through the creation and use of special universal access/service funds. Funds are set up as a mechanism to finance network expansion in areas where the market access gap exists. Monies collected in the Fund can be disbursed to operators, usually in a competitive manner, to facilitate the rollout of obligations, or assist in the achievement of identified strategies, such as underserved area/rural licences.

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<sup>65</sup> Like many countries, South Korea, Sri Lanka and Nepal used internal cross-subsidies widely to fund universal access/service. Hank Intven (2000) ed. *Telecommunications Regulation Handbook*, infoDev Program, The World Bank. Module: Universal Access/Service.

<sup>66</sup> Laffont J.-J. and J. Tirole (2000) “Competition in Telecommunications”, The MIT Press.

Although many governments turn to the establishment of funds as a ‘quick and easy’ way of collecting monies to throw into universal service, setting up a fund properly is not an easy task. Adherence to WTO Reference Paper requirements, of transparency and fairness are important, as is the requirement that the revenues collected are used for development of the telecommunication sector. The WSIS Task Force on Financial mechanisms for ICT for Development (ICTD) which investigated the scope and adequacy of existing financial mechanisms for ICTD found that national universal service funds can play an important role in lowering the costs of delivery of services to identified target areas, but may require substantial institutional and implementation capacity to succeed.<sup>67</sup>

The creation of special funds to finance the delivery of telecommunication services in predetermined underserved areas or to provide subsidies for categories of people pre-identified as eligible for subsidies has gained popularity in the last decade. In many ways the same questions that need to be answered with respect to the provision of subsidies generally must be addressed to decide how the monies in the Fund should be used. Extensive literature exists on the creation of Funds, including a thorough analysis of Funds which should be consulted for a more in depth analysis of Funds.<sup>68</sup> These funds may either be physical funds administered by the regulator or some other body (see paragraph 5.2.1.2). Funds may also be virtual funds in which designated operators make direct payments to the universal service provider (COLR).

Key questions that must be answered before a Fund is established include:

- Where will the monies come from, the government or private sector? If its from the private sector, what categories of market player should contribute?
- Who should administer the fund, a separate universal service agency, the NRA? and
- How do governments allocate subsidies?
- Who will the recipients of monies in the fund be?

#### 5.2.2.1 Contributions to the Fund

With respect to the question of where the monies should be sourced from, there are three broad approaches:

- Contributions may come from a ‘tax’ or a levy imposed on all operators, or from government itself. In **Peru** and in **Uganda**, for example, each telecommunications provider is required to contribute 1 per cent of its gross revenues to the Fund for Investment in Rural Telecommunications (FITEL) and the Rural Communications Development Fund (RCDF) respectively. FITEL and RCDF finance all or part of telecommunications development activities. Operators bid for ‘smart subsidies’ with the lowest bid winning. In the ECOWAS-UEMOA region, in **Burkina Faso and Niger**, operators are required to contribute 2 percent and 4 percent respectively of telecommunications-related turnover per annum to the Fund. In **South Africa**, the contribution is set much lower at 0.2 percent of gross revenues. The level of contribution must be determined based on an economic analysis of a particular locality which takes into account universal service requirements and the number and nature of players in the market.
- Alternatively, some governments allocate a portion of their general revenues to the universal service fund. These revenues typically have been raised through taxes, tariffs, or other similar mechanisms. In **Chile**, monies for the universal service fund are allocated directly from the national budget. This method of providing funding is transparent, explicit,

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<sup>67</sup> WSIS Task Force on Financial mechanisms for ICT for Development (ICTD). Finding 10.

<sup>68</sup> Trends 2003, Chapter 4.

and may reduce economic distortions. But it does not always raise sufficient funds or receive adequate political support. Similarly, in order to promote universal access, **Botswana's** government provides annual subsidies to Botswana Telecommunications Corporation (BTC) for infrastructure development in under-served areas. BTC submits business plans and partly funds the roll-out of services from its own profits, subject to approval from the Ministry of Finance.

- **Nepal** has combined approaches, establishing a fund that consists of monies from a levy imposed on the operators and from government funding. In ECOWAS-UEMOA, it appears that **Nigeria** has adopted a similar approach and in terms of the Nigerian legislative framework, the sources of contributions to the Fund are varied and include resources from the state, operator levies, and donations.

The establishment of a Fund is a financing mechanism for universal access/service. However, it can easily be seen as a strategy for the achievement of universal access/service goals as well. Although on one level the requirement to make a contributions to a USF is a “pay” strategy, the USF in some countries represents an interesting mix between traditional “pay” and “play” strategies. They impose an obligation on those who pay into the fund, but in some countries such as **Mali**,<sup>69</sup> in line with international best practice, the operators that participate directly in providing universal access/service are allowed to deduct their costs for doing so from their Fund contributions. In this way a universal service fund can be both an obligation and a subsidy, and a burden and an incentive, at the same time.

#### 5.2.1.2 Management and Administration of Funds

The key question with respect to the administration of Funds, is, “**what entity or authority will have responsibility for managing its operations?**” There are two basic approaches to addressing this question. The first is to make the NRA responsible for the administration of the Fund. The second is to establish an independent third-party agency dedicated to this function.

- There is a fairly strong consensus among a majority of countries implementing such policies that **USF fund administration should come under the control of the NRA**, where it is separate from the incumbent operator but under the direction of the regulator.<sup>70</sup> Proponents of this view argue that given that universal service fits in the context of sector reform it is not always beneficial to separate the agencies dealing with the two issues. Specifically the NRA deals with tariffs, interconnection and licensing, all regulatory policy areas that will be important in addressing universal service and in particular the market efficiency gap. A separate universal access/service agency would then deal with the access gap – simply universal access/service projects. The danger is that the Agency may miss seeing areas where the market gap is already narrowing and thus impacting the policies underlying universal access/service.
- Notwithstanding the above, it has been argued that in some developing countries, where universal access/service is a more urgent priority on the national agenda, **a separate agency could be established to address universal access/service either from a policy or administrative perspective**. In some countries, such as **South Africa**, a separate agency has been set up to deal with universal service and to administer the Fund. Those in favour of a separate agency suggest that a specific institutional framework is needed to properly

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<sup>69</sup> Order n° 99-043/PR-RM of 30 September 1999.

<sup>70</sup> Townsend, DN. “ITU/CTO Model Universal Service/Access Policies, Regulations and Procedures. Part I: Universal Service/Access Policy, and Creation and Operation of Universal Service Funds” and ITU Trends 2003.

implement universal service policy. Furthermore, in some countries, like in **Canada**, for instance, the regulatory agency sets the overall policy and direction of the regime, but a fund administrator collects and distributes the money and is responsible for keeping and auditing the books.

The ultimate decision will be based on the level of strategic importance afforded to universal access/service, the budget available for it, and the capacity available to staff two separate agencies to implement universal service strategies, as well as other considerations.

### 5.2.1.3 Management Autonomy

No matter which institutional model is followed, the operation of the fund should be a stand-alone function, separate and distinct from the other regulatory activities relating to licensing, tariffs, competition or spectrum management (in the case of an NRA housing the function). This means that there should be<sup>71</sup>:

- **Budgetary and Accounting Independence** such that the budget of the USF is maintained entirely separately from the NRA's operating budget, if they are housed together. This means that an independent bank account and accounting records should be established solely for the collection and disbursement of the Fund, with no co-mingling with other regulatory or government funds. In **Togo**, although a Fund has not been formally established, operators make contributions to universal access/service by paying monies into a special account managed by the NRA. Although it is not advisable to start collecting monies before the proper legislative and institutional frameworks are in place, it is important to note the separation of accounts in Togo is in line with international best practice.
- **Annual financial reporting** with respect to the contributions to and use of the Fund. An annual independent audit should also be conducted and should be required in the founding legislation of the body responsible for the administration of the Fund.

## 5.3 Where Should the Monies Go: Allocating Subsidies

Irrespective of the source of subsidies (i.e. other operators, Funds, donations), as argued earlier, targeted subsidies are the most effective means of financing universal access/service. These subsidies can be given to either operators or certain segments of the population.

### 5.3.2 When operators are recipients of subsidies...

If governments decided to fund operators through their universal service programmes, they must ensure that the subsidies that they provide are 'smart subsidies' which should be used to encourage operators to enter the market, but should not create an unending dependency on subsidy. 'Smart subsidies' should be provided based on the objectives of addressing the challenges of isolation and population:

- **Reaching locations where economic conditions inhibit pure market-based solutions.** In principle governments should only subsidise rollout in areas where the market cannot economically provide the required services. Governments should undergo a thorough consultative process which includes communities and operators in order to determine which areas are eligible. Such process must include a review of relevant cost and demand assumptions.

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<sup>71</sup> Ibid.

- **Reaching scarce and dispersed populations.** Rollout to citizens in the most rural, dispersed geographic areas should generally receive priority over more urban populations. However, some subsidies should also support needs in more densely populated areas.

**How do governments provide subsidies to operators?** Operators are generally subsidized in one of two ways. First, they may compete for subsidies. In this scenario the most competitive (usually the lowest) bid earns the subsidy, which is granted along with certain obligations, such as network construction targets. This method of disbursing subsidies is particularly effective in scenarios where the NRA does not have sufficient capacity to determine the costs of universal service rollout independently, or where due to information asymmetries cannot properly assess the cost of providing services. In this way, the market drives the determination of the price/subsidy.

Alternatively, governments may give subsidies to operators that are given universal service obligations as will be described in Section V.

### 5.3.2 When users/consumers are recipients of subsidies...

**What mechanisms can be used to subsidise consumers?** Instead of (or sometimes in addition to) subsidizing operators, governments can provide subsidies directly to certain groups of people. These beneficiaries can be defined by their socio-economic characteristics. Governments often provide subsidies to groups such as low-income residents, people with disabilities or pensioners. In some countries, in recognition of the role of ICTs and their importance in education, governments have identified schools as beneficiaries of subsidies and have therefore set up an “education rate” or “E-rate.”

#### **Assistance for Users<sup>72</sup>**

User or consumer subsidies are generally provided to a number of segments of the population who are considered ‘at risk’<sup>73</sup>. Broadly, universal service policy should make provision for three forms of assistance:

**Assistance to low-income households:** Indicators of the poverty level in a town or city should be among the most significant factors in determining priorities for subsidies. These subsidies should be given to households where the income is too low to allow them to afford communications service, even though the service costs are the same as for others. Lifeline (see paragraph 5.3.4) is one such example.

**Assistance for people in low teledensity areas or with low access to communications.** A low degree of existing infrastructure and access to communications should also be a criterion, especially for projects that will require the rollout of infrastructure. In an ICT context “low access to communications” goes beyond infrastructure and can also include barriers to access due to low education and training. Training-oriented projects for low-income and illiterate urban populations can also receive funding.

**Assistance for historically disadvantaged groups.** Particular emphasis should be placed on promoting access for women, youth and those with disabilities, as well as segments of the population who may have been excluded from past development opportunities for political or cultural reasons.

<sup>72</sup> Adapted from Townsend, DN. “ITU/CTO Model Universal Service/Access Policies, Regulations and Procedures. Part I: Universal Service/Access Policy, and Creation and Operation of Universal Service Funds.” Pg 26 and ITU Trends 2003.

<sup>73</sup> Targeted Programs to Promote Universal Service [www.benton.org/publibrary/uniserv-propective/programs.html](http://www.benton.org/publibrary/uniserv-propective/programs.html). Sourced on 15 May 2005.

### 5.3.3 When universal access projects are recipients of subsidies...

In some cases, projects can be recipients of monies from the Fund. Community based projects can also be eligible to receive subsidies if they are well motivated and the decision to provide funding is based on, at a minimum:

- Social and economic costs;
- Population covered
- Quality and quantity of services provided
- Project autonomy and potential for social and economic sustainability (subsidies should be short-term where possible, unless it can be proven that the market has reached its limits in that locality and delivery of services will *never* be commercially viable in which case without financing from the Fund the challenges of universal service and access will not be addressed).
- The economic impact of the project.

Universal access projects such as MPCCs and telecentres could potentially receive subsidies if they meet the above-mentioned criteria. In addition once governments recognise that they have to focus beyond physical networks and infrastructure to tackle the broadband divide, it will eventually be necessary to expand the scope of subsidies to include projects around capacity building, the development of content and applications, and other strategies to make ICTs a tool for development.<sup>74</sup> Thus, in addition to users and operators, subsidies can be targeted at specific capacity building and human resource development programmes. Alternatively, they can be used to finance local content development or the procurement of ICT equipment.

### 5.3.4 E-rate: Subsidising Education

An E-rate is a discount rate for schools to obtain Internet access. It recognises the importance of literacy and education in promoting the use of ICTs. It further acknowledges the often prohibitive costs of accessing ICTs and in particular “advanced services” for learners. Often, the E-rate is included in communication legislation or regulations and is monitored by the NRA. Various E-rate programmes and policies that have been adopted throughout the world include a six-level e-rate strategy implemented by the **United States Federal Communications Commission** in 1997 and administered by a not-for-profit organization. The E-rate programme connected more than 1 million classrooms in its first two years (between 1997 and 1999). In the United States example, educational institutions can procure any *telecommunications service* on a subsidized basis. Second, support is available for *Internet access*. Finally, these discounts can apply to *internal networking* that is necessary to connect school or library terminals to the Internet. The discounts also cover expenditures for networking hubs, routers, network file servers and server software, and maintenance of network systems. Equipment, such as personal computers, fax machines, modems, and asbestos removal, however, is specifically excluded. Training, non-network software, voice mail or information services in general, electrical connections, and security are also not eligible for discounts.<sup>75</sup> Interestingly, in the United States a similar scheme exists for the provision of subsidies to public or non-profit health institutions located in rural areas. Similar to the E-rate subsidy, the health subsidy is paid to the provider of communication services, who then provides those services at a discounted rate.

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<sup>74</sup> Currie, W and Esterhuysen, A. Draft : A new Policy Framework for ICTD (February 2005).

<sup>75</sup> <http://www.ntia.doc.gov/opadhome/uniserve/univweb.htm>

**Senegal** has implemented an E-rate programme. The Ministry of Education and the incumbent operator, Sonatel, entered into an agreement where educational institutions can obtain preferential terms for Internet access. Discounts depend on the type of connection but can run up to 75 per cent. Discounts are also provided on installation charges. Sonatel bills the schools, and both the Ministry and Sonatel are coordinators of the programme.<sup>76</sup>

Finally, the scheme in the **United Kingdom** is fairly simple and offers a fixed monthly charge for an agreed level of always-on bandwidth to educational institutions.<sup>77</sup>

**How do governments decide what the level of the E-rate is?** With respect to establishing the level of the E-rate discount, it is advisable that discounts be regulated and should allow the operator to recover at a minimum its incremental costs in order to avoid heavy subsidies. The E-rate can also be set by looking to the market for guidance. An option is to link the E-rate to the lowest rate that the operator charges its commercial customers for a similar service (therefore schools would benefit from the same discounts as large companies).<sup>78</sup>

### 5.3.5 Lifeline: Subsidising Low Income Users

Regulators can also use targeted subsidies for installation and non-usage charges. A successful targeted subsidy is the ‘Lifeline’ programme in the **United States**; a similar programme exists in some **European Union (EU) countries**. Lifeline provides a reduced monthly rate for low-income users. Policymakers may also consider targeted subsidies for the roll-out of digital services, once more basic or traditional services have been addressed.

## 5.4 How to Determine the Level of Subsidy? Verifying USO Costs

Operators on whom USOs have been placed incur losses in the provision of required services where the cost of supplying the required service exceeds earned revenue. This is often termed the *universal service cost*. The practical difficulties of determining this cost are well known. In situations where governments take the option of providing a subsidy to cover the universal service cost, the calculation of such costs becomes important so that they can ensure that they are not providing more in subsidies than is warranted by the actual social benefit the subscriber will receive. It is also important for regulators to be able to determine the universal service cost so that they can play an adjudicative role in scenarios wherein operators (such as a Carrier of Last Resort) are allowed to recoup these costs from other operators.

Operators and regulators often embark on detailed cost-studies and analyses to quantify the universal service cost. Such studies are complex. Some regulators have found innovative ways to ensure efficiency in awarding subsidies. For example:

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<sup>76</sup> In South Africa, educational institutions are entitled to a 50 percent discount on internet access and calls to telecommunications service providers. In this case it is the operators who subsidise the schools from their coffers, as they receive no funding from either the Fund or government for this purpose. E-rate for African Schools . How Would It Work and Who Pays?., *Balancing Act News Update*, 159, 2 June 2003. [http://www.balancingact-africa.com/news/back/balancing-ad\\_159.html](http://www.balancingact-africa.com/news/back/balancing-ad_159.html)

<sup>77</sup> E-rate for African Schools . How Would It Work and Who Pays?., *Balancing Act News Update*, 159, 2 June 2003. [http://www.balancingact-africa.com/news/back/balancing-ad\\_159.html](http://www.balancingact-africa.com/news/back/balancing-ad_159.html)

<sup>78</sup> Targeted Programs to Promote Universal Service [www.benton.org/publibrary/uniserv-propective/programs.html](http://www.benton.org/publibrary/uniserv-propective/programs.html) Sourced on 15 May 2005.

- The U.S. **Federal Communications Commission has developed the Hybrid Proxy Cost Model**, which does not model the network of any specific operator.<sup>79</sup>
- ITU has developed a cost model and accompanying software, **COSITU**, which is a costing, pricing and regulatory tool for services delivered over various types of networks.
- **Competitive bidding:** Regulators often lack the necessary cost information to apply costing models effectively. The best way to side-step this problem is to hold a competitive bidding process, in which operators can bid for universal service projects. Competitive bidding is a good way to determine what the costs of providing universal access/service may be in any given area, and therefore of determining whether a subsidy is required. The operator requiring the least USO compensation would be granted the rights to provide universal service in the specific area concerned. In order to prevent the possibility of collusive bidding it may be appropriate for the NRA conduct a study and to fix a reserve price based on an estimation of net cost of universal service to the current incumbent provider.

## 6 CONNECTING PEOPLE: SOCIAL ELEMENTS OF THE DIVIDE

### 6.1 Thinking Beyond infrastructure

When one considers the challenges of ICTs beyond infrastructure delivery, it is disheartening to note that in 2002, the World Bank, looking across all types of ICT services, recorded that:

- in 1999 there were only 1 million Internet subscribers on the entire African continent while the **United Kingdom** alone had 15 million;
- excluding South Africa, in 2002 **Africa** generated only 0.02 percent of global Internet hosts;
- residents of low income countries owned 1.5 radios for every 10 people, compared to 13 radios per 10 people in high-income countries in 2002.

The global digital divide is stark. The divide within countries is also immense and generally, as discussed, manifests itself as a rural/urban or wealthy/poor divide. The World Bank further recorded that in the same year:

- In **Panama** households in the wealthiest quintile were 43 times more likely to have private telephones than those in the poorest quintile;
- In **South Africa**, households in the wealthiest quintile were 125 times more likely to have private phones;
- In **Ethiopia**, over 60 percent of the population was illiterate and 98 percent of Internet users had a university degree.
- There were also significant access gaps defined by gender and in the **Republic of China**, for example, in 2002, seventy-five percent of Internet users were men, and in **India** female participation in computer sciences courses in the country was around 25 percent.

Given the impact of the entire ICT value chain on the economy, the traditional emphasis on the role infrastructure plays in universal access is yielding to a recognition that it is not only important to connect networks to other networks, it is perhaps more important to connect people to networks. In that respect, addressing imbalances highlighted by the World Bank above with respect to factors such as gender, level of education, literacy, language and physical challenges are just as

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<sup>79</sup> ITU Trends 2003, Chapter2.

fundamental to the attainment of universal access/service goals. If not properly considered, these factors might, in fact, impose barriers to the achievement of evolving universal access or universal service targets.<sup>80</sup>

## 6.2 Widening the scope of universal access/service in the context of ICTs: Talking Within Government

A glaring problem that this new focus on the social side of ICT reveals that beyond the challenge of establishing private public partnerships **the challenge of creating interdepartmental alliances within government is also key.** In most African countries convergence of regulatory agencies has not occurred, and so the policy focus for NRA's is defined narrowly as telecommunications as opposed to ICTs. This necessitates coordination between departments that deal, on a technical level, with different elements of ICTs beyond just the technological and infrastructural challenges and opportunities. Departments that do not have technology at their core should also be brought into the universal access/service debate.

This subsection will explore some of the ways in which universal service policy for ICTs goes beyond the scope of traditional universal service policies and examines the interdepartmental relationships that may need to be forged in identified areas as a result.

### 6.2.1 Making ICTs Relevant...Coordinating at a Policy Level

With the shift in focus from narrowband to broadband services a new, previously inconsequential question arises with respect to the rollout of networks – that of *relevance*. Previously the concerns were as stated earlier accessibility, availability and affordability – now the relevance of information that they carry is paramount. In today's information society, given the broadening of the uses of networks for both voice and data, relevance is a key issue and the relevance of content and applications will be determined by several factors including:

- **Language.** This factor is increasingly important in the development and use of ICTs. It is a fact that content will drive the growth of more advanced services, and as such it is critical that users are able to first of all understand the content that they are being encouraged to access even before they can identify with it. The availability of local-language websites, including ones with local information, news, government information and community information is key. In order to increase the number of Internet users in developing countries, it is important to promote local content and address local development, education and ICT training issues. The latter issues are not generally addressed by telecommunications departments and require the input of **departments of arts and culture, science and technology, education, communications, finance, and social development, or equivalent departments, amongst others.**
- **Literacy and education.** This factor is critical given the importance of knowledge and information, hence the trend towards the implementation of e-rates (see section 5.3.3). However, why deliver an e-rate if the education department is not ready to take advantage of being a recipient of the subsidies for the telecommunications sector? It is interesting to note that in **Senegal** where an e-rate scheme has been established, it is the **Ministry of Education** and the incumbent operator, Sonatel, who have entered into the agreement, and not the telecommunications ministry. **Departments of education, finance, and communications** must liaise to ensure the effective implementation of literacy and education-related projects.

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<sup>80</sup> ITU Trends 2003, Chapter 2.

- **Accessibility.** The importance of ICTs for people with physical disabilities is becoming more widely recognized to include as many people as possible in the economy, given the impact of ICT's on the economy and in specific for socio-economic development. Countries such as **Sri Lanka**, for example, which have passed general legislation protecting the rights of persons with disabilities, are beginning to provide special ICT services for populations with special needs. These include offering bills in Braille for blind customers, installing special phones for the hearing impaired and the roll-out of wheelchair-accessible payphones. This can also be captured in 'codes of conduct' if a self-regulatory approach is supported in a country, or through regulations or licence conditions otherwise. Coordination with departments of **communications, finance, health, social development and education amongst others** is therefore important.
- **Local Content.** The development of locally relevant content is subject to economies of scale which increase the challenge in addressing this concern. In light of this, it is important that governments identify themselves as key providers of locally relevant content. Should governments adopt the Internet as a tool for communications, it will spur the take up of internet on a wider scale. Similar to the consideration of language, at a minimum **government departments of arts and culture, science and technology, education, communications, and finance** should coordinate efforts in this regard.
- **Gender.** Gender issues in ICT policy can be seen to fall into two categories. Firstly, there are the gender issues that affect nearly all aspects of physical access to infrastructure and equipment, and then there are those that relate to the social impact of ICTs.<sup>81</sup> The rural/urban and rich/poor divides that characterise ICT development generally, have a greater effect on women given that in developing countries the majority of women live in rural areas. Further, women in most African countries are disproportionately represented amongst the poor. Thus, ICT policy must be engendered if universal access/service targets are to have any meaningful impact on women. Gender issues should be addressed across all **government departments, including finance, social development, communications, public enterprises and others.**

### 6.2.2 Making Subsidies Relevant...Coordinating at a Funding Level

In order to ensure that spending on ICTs is relevant and addresses the areas that are of key concerns to country (e.g. gender, education, or health), there is a need for cross-pollination between government departments which traditionally did not deal often with one another. Institutionally, this cooperation and coordination can be achieved by ensuring that a variety of government departments and stakeholders are involved in the decision-making with respect to the use of subsidies in the Fund.

**Côte D'Ivoire's** legislative framework presents an interesting example of how government departments should work together to make decisions on universal service strategy through participation on the management committee of the Fund. In Côte D'Ivoire, payments to the Fund are made through the Ministry of Economic Affairs and Finance and the Fund is administered by a five (5) member management committee which includes a representative of the Minister of Economic Affairs and Finance who chairs the committee, and a representative of each of the following: the Ministry of Economic Infrastructures; the Director General of the Autonomous Amortization Fund; the Ministry of Planning and Programming; and the NRA.

The management committee is assisted by a technical committee chaired by the Ministry of Telecommunications and comprising two representatives of the Ministry of Economic

<sup>81</sup> [http://www.apc.org/english/capacity/policy/mmtk\\_gender\\_ictpol\\_hafkin.pdf](http://www.apc.org/english/capacity/policy/mmtk_gender_ictpol_hafkin.pdf)

Infrastructure, two representatives of the Ministry of Finance and the Economy, two representatives of the National Technical Studies and Development Office (BNETD), two representatives of the NRA, a representative of Côte d'Ivoire Telecom, and representatives from the other operators.

## 7 MEASURING UNIVERSAL ACCESS/SERVICE

### 7.1 Reviewing Obligations, Checking Progress

Given the trend toward telecommunication liberalization and privatization, the fact that in many countries sector reform is currently underway, the rapid pace of technological development and the evolving definitions of universal access/service, policy makers may wish to periodically review and, where necessary, revise their policies. This will help ensure they remain relevant and will help regulators to measure their success. As discussed, definitions of the term “basic” will change with time, as will targets and costs for universal service.

In order to both determine the need for a policy and its success it is critical that one is able to, in some way, measure the extent of the need and the benefit. In the case of universal service, the digital divide refers to the gap in access to ICT services. It is measured using not only traditional quantitative telecommunications-specific indicators such as teledensity, but also as technology develops and policy takes on an ICT focus, indicators such as the number of personal computers (PCs) and Internet hosts per population. It is therefore important that ICT focused departments encourage departments in government responsible for the collation of statistics and population census to gather relevant information. The following is a list of potential indicators as identified by the World Bank that can be used to measure national levels of access/service:

#### **Looking at Infrastructure: Quantitative Measures of Universal Access/Service**

- *Overall sector development:* telephones (fixed, mobile), Internet hosts or users, Internet traffic, radios, computers, e-commerce, postal use, all on a per capita basis.
- *Extent of competition:* number of operators, and the market share of the largest ones, in main ICT market segments.
- *Access for the excluded:* telephone/Internet/postal/broadcast access among the poorest, access in rural areas, and the percentage of land area/population with access.
- *Cost and quality of service:* cost of local/international calls, ISP service, and high-bandwidth connectivity; waiting time for a phone line; and the percentage of calls completed successfully.
- *Quality of content:* size, number and relevance of local language websites, and frequency of hits.
- *Availability of skills:* number of students given Internet- based instruction.

Due to the broadened scope of universal service to include areas such as education and training, in some instances quantitative measures of sector progress should be complemented with **qualitative estimates**:

### **Looking at Services: Qualitative Measures of Universal Access/Service**

- *Status of reform:* movement toward a well-regulated, competitive environment in the sector with strong provision for universal access, and extent of privatization.
- *E-readiness:* passage of an appropriate package of e-commerce enabling legislation, financial reforms for Internet-based transactions, and improvements in service delivery.
- *Improvements in entrepreneurial environment:* more business people ready to make use of the opportunities presented by the new technology.
- *Quality of content:* content sites that overcome market barriers and are relevant.
- *Improvements in knowledge:* Well-disseminated studies and reports, with focus on developing economies, on best practices in telecommunications/ Internet/postal/broadcast areas.

## **8 CONCLUSIONS**

The discussion in this report of universal access/service and the best ways to attain it is by no means a new one. Nor is it unique to ECOWAS and UEMOA. Indeed, one could argue that this core objective has been at the heart of global telecommunication policy for over a century. The goal of universal access/service has withstood a number of policy shifts in the communications sector, including the nationalization of public telephone administrations, the regulation of private-sector monopolies, and the introduction of competition through sector reform. Providing affordable services to all the citizens of a given country remains a key goal for all governments given the benefits associated with telecommunications initially, and ICTs today.

The notion of universal service has been a constant, but its definition has changed and will continue to evolve with the evolution of technology and the development of the market. This evolution has resulted in a paradigm shift in respect to which universal service is no longer seen as an obligation, but can be characterised as an opportunity. This shift is due in part to sector reform which has shown that the limits of the market are not as tight as initially anticipated. The market can go a significant way in addressing the market efficiency gap because there is clearly a better business case for universal access/service than governments initially believed. Where the business case ceases to exist for large operators, the market efficiency gap is closed and the true access gap must be tackled. This is where explicit universal access/service policies focused on incentive-based approaches step in, and the strategies addressed in this report become relevant.

The policy options explored in this report need to be pursued in the proper regulatory, legal and policy contexts. Thus it is important that clear mandates are first given and the institutional framework is in place to support whatever policy options are selected.



## **Annex A**

### **Salient features of National Universal Access/Service Frameworks in ECOWAS <sup>82</sup>**

#### **Benin**

Order n° 2002-002 of 31 January 2002 relative to the basic telecommunications principles in the Republic of Benin, in article 1, defines access to universal services as follows: « access to telecommunications services for all, under reasonable conditions, enabling those who have the means to subscribe and establishing a sufficient number of public access (community call centres) for the others in order to ensure that they would not have to travel long distances for that purpose. »

Article 5 of the order stipulates that « the Minister in charge of telecommunications shall define the sector's development policy, particularly the measures likely to generalize the use of new information and communication technologies, as well as the strategy for universal access to services. »

The obligations relative to the universal access to services are defined and complied with in a transparent, non-discriminatory and neutral manner from the standpoint of the competition.

Licensed operators or those with clearance are required to contribute financially in the implementation of Universal Access / Service. Thus, article 14 stipulates that: « operators with a license or a clearance shall also be subjected to the following obligations : financial contribution to the universal access to services and compliance with the statutory provisions pertaining to land-use management and environmental protection, providing the information required for the preparation of the universal directory of subscribers, forwarding toll-free emergency calls, financial contribution to research, training and normalization relative to telecommunications etc. »

Finally, article 22 requires all operators to provide users with emergency numbers to call public organizations in charge of protecting human lives, police interventions and fire fighters, as well as information and assistance numbers. This article states that all providers of telephone service accessible to the public are compelled to forward emergency calls.

#### **Burkina Faso**

Article 5, paragraph 3 of Law n° 051/98/AN of 4 December 1998 relative to the reform of the telecommunications sector in Burkina Faso defines the universal service as: « a minimum provision of telecommunication services to the public throughout the State territory, at an affordable price and in compliance with the principles of equality, continuity and universality. »

Article 9 of Law n° 051/98/AN of 4 December 1998 states as follows: « Universal service refers to telecommunications services in the field of telephone and network operation services accessible to the public as well as services directly connected to the above-mentioned services which are considered as indispensable to the public because they are basic services.

A decree issued by of the Council of Ministers defined the specific terms governing the provision of the universal service by referring particularly to:

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<sup>82</sup> Akue-Kpakpo, Abossé (2004).

- a) the telecommunications services in accordance with the above paragraph ;
- b) the density of the minimum service;
- c) minimum service quality ;
- d) definition and price tailoring rules ;
- e) provisions relative to its compensation, if necessary ».

Decree n°2000/408/PRES/MCIA relative to the terms of implementation of access to the universal telecommunications service explicitly redefined the notion of service in its article 3 as follows :  
« The provision of the universal telecommunications service consists in :

- Providing a connection to a telephone network accessible to the public in the service area and at a reasonable price, to any person who requests for it.
- Provide at least one access point in the urban area, which comply with the standards fixed by this decree, within a radius not exceeding two (2) km away from any centre.
- Provide at least one access point in each commune in compliance with the standards fixed by this decree, as well as the possibility to service the town council and a health centre.
- Establish a public access point in each village
- Forward toll-free emergency calls to the nearest public services (police or gendarmerie, firefighters, emergency medical services)
- Comply with quality standards fixed at national and international levels for the provision of telephone service »

The decree institutes the universal service access fund, the purpose of which is to « contribute in financing the extension of the telephone service to rural or urban areas, when this extension cannot be realized without being subsidized. »

The fund is sustained by resources from telecommunications service operators and suppliers subjected to the dealership or clearance systems, public or private donors and local authorities.

Operators are required to contribute 2% of the turnover deriving from the activities subjected to the dealership or clearance. This amount may be reviewed by a decree issued by the Council of Ministers at the proposal of the Telecommunications Regulatory Authority. The Minister in charge of Telecommunications is the appropriator of funds while the accountant is the controlling authority.

The funds are administered by a management committee chaired by the Minister in charge of Telecommunications who determines the composition and functioning of the fund, through a joint decree issued with his counterpart in charge of Finance.

The universal service fund prepares a three-year planning of services to be provided and updates the list of communes and villages which are not yet totally or partially provided with the universal service.

The project evaluation criteria and the conditions of disbursement of the subsidies are defined by the decree.

### **Cape Verde**

Decree 5-94 of XXX 199X is the authority on telecommunications. In point 11.1, it stipulates that the government is responsible for developing a telecommunications network throughout the country. Every citizen is entitled to a telecommunications service provided he/she can pay for the costs incurred.

The decree further provides that emergency calls shall have priority over normal calls.

In the dealership contract between the Republic of Cape Verde and CV Telecom, the operator is required to service any locality with more than 200 inhabitants.

### **Côte d’Ivoire**

Law 95 526 of 7 July 1995 relative to the telecommunications code in force makes no mention of either access or universal service. However, a decree (n° 98-625) on the institution of the National Telecommunications Fund (FNT) was issued on 11 November 1998. The purpose of the Fund is to finance rural telephone operations under the State’s responsibility. Within the meaning of this decree, a rural telephone operation means « any operation aimed at relieving the isolation of rural zones, in terms of telecommunications in Côte d’Ivoire ».

The Fund is under the economic and financial tutelage of the Ministry of Economic Infrastructures. Its resources consist of:

- the opening up fee paid by the operators,
- the loans contracted by the State and allocated to the Fund,
- the return on investments,
- State budget funds,
- donations and gifts,
- any other taxes and surcharges which can be created later, particularly the surcharge collected on telephone call costs,
- and more generally, any other revenue that could be assigned to it.

The fund is administered by a five (5) member management committee comprising a representative of the Minister of Economy and Finance who chairs the committee, a representative of the Minister of Economic Infrastructures, the Director General of the Autonomous Amortization Fund, a representative of the Minister of Planning and Programming and a representative of the Telecommunications Agency of Côte d’Ivoire.

The management committee is assisted by a technical committee comprising two representatives of the Minister in charge of Economic Infrastructures, two representatives of the Minister of Finance and the Economy, two representatives of the National Technical Studies and Development Office (BNETD), two representatives of the Telecommunications Agency of Côte d’Ivoire, a representative of Côte d’Ivoire Telecom, a representative of other operators. The technical committee is chaired by a representative of the ministry in charge of Telecommunications.

A draft bill relative to the telecommunications code is being prepared by the Telecommunications Agency of Côte d’Ivoire (ATCI); part of the text is devoted to the universal service. In article 1, it stipulates that the purpose of the law is to “ensure that a good quality and affordable universal service is provided to all categories of the population all over Côte d’Ivoire, particularly through the development of telecommunications networks and services and an increased telephone density”. The definition of universal service specifies that it should be provided in “compliance with the principles of equality, continuity, adaptability and transparency”.

Chapter III of title VIII of the draft bill is devoted to the universal service. This chapter describes universal service as: “all the telecommunications requirements of general interest, aimed at providing access for all to the basic good quality telecommunications services, at an affordable price, all over Côte d’Ivoire. It shall be provided in compliance with the principles of equality, continuity, adaptability and transparency.” It further stipulates that the provision of universal service lies with the State while the Regulatory Authority (ARTCI), as the body entrusted with implementing the universal service policy thrust defined by the State, is the contracting authority.

The universal service seeks to provide every citizen with « a good quality telephone service at an affordable price »; accessible public telephone booths; toll-free emergency calls; an inquiry service; a subscribers' directory, in printed and electronic form»

Article 158 of chapter III institutes the National Universal Telecommunications Service Fund (FNSUT). It is stated that a decree taken by Cabinet shall determine the composition and functioning of the fund. Finally, articles 159 and 160 define the specifications for the universal service provision and the mode of designation of operators in charge of the universal service.

### **Gambia**

Article 4 of the law on telecommunications being drafted in the Gambia, defines the universal service obligation as a duty to provide a basic telephone service free of charge or at an affordable price and for social reasons, to people with social problems considered as such by the law, or the obligation to contribute to a universal service fund in accordance with the laws and regulations which will be promulgated by the Gambian Telecommunications Regulator (GTR).

The law being drafted stipulates in its article 83 that the Operators designated by the GTR through a regulation, a directive or the issuing of a license, shall participate in the universal service obligation by contributing to a fund, the provision of a telecommunications service or system whose cost is lower than the normal price or through any other form stated by the GTR.

Article 83 provides that all operators, excepting those specifically exonerated by the GTR, shall participate in the universal service objective in a uniform/regular manner in accordance with the formula or established procedure.

### **Ghana**

Ghana has initiated a process for the revision of its telecommunications law. A national telecommunications policy declaration paper was commissioned by the Communication Ministry. The draft telecommunications policy declaration dated 8 June 2000 focuses its latter part on access/universal service. The paper stipulates that the access/ universal service policy is a key instrument for the development of the Information and Communication sector, of social advancement and for the economic development of the country. It further states that the government considers access/universal service to information and communication as a fundamental right for each citizen.

The policy declaration paper defines universal access as the availability, in a community, of broadband inquiry and communication services including the voice, data transmission, Internet access, access to relevant local contents and government services of high quality at affordable prices.

The same paper defines universal service as the availability to all Ghanaian citizens, at home or at work, of broadband information and communication services including the voice, data transmission, Internet access, access to relevant local contents and government services of high quality at affordable prices.

To achieve the fixed goals, the National Communications Authority (NCA) will assign specific obligations and responsibilities to each operator with a license to ensure that all market actors converge towards the access/ universal service goals. The nature and level of this obligation may vary depending on the operators, provided that these variations abide by the rules of transparency and non discrimination.

An access/ universal service fund dubbed GIFTEL (Ghana Investment Fund for Telecommunications) shall be set up. GIFTEL shall be instituted to collect the financial contributions of operators with a license or an NCA clearance and assign them to the development of access/ universal service.

The fund will be used to finance projects in unserved or inadequately served zones. The eligible projects are those aimed at improving human resource capacities in the ICT sector, develop or deploy infrastructure and services, and those which will make it possible to provide government services and produce applications and local content.

GIFTEL subsidies will be granted on a competitive basis following a publicly advertised tender call. They will be awarded as seed capital and not as an operating subsidy.

GIFTEL will be jointly managed by the government and a private company with the capacity of providing professional and competitive managers. GIFTEL will be administered by a committee comprising ministers including the Telecommunications Minister, the NCA, and members of the leading companies contributing in the fund, including representatives of the association of industries of the sector.

## **Guinea**

Law L/92/016/CTRN of 2 June 1992 relative to the general telecommunications regulations does not attach much importance to access/universal service. The shareholder agreement concluded between the Republic of Guinea and Telekom Malaysia on 23 December 1995 does not refer to access/ universal service either.

A draft amendment to the law is under discussion. This draft law provides for the establishment of the Post and Telecommunications Regulatory Authority (PTRA). The PTRA are to be responsible for the implementation of the sectoral policy of the government. Universal access/service is defined as the provision to all of the entire range of telecommunication and ICTs services. This list is defined by decree upon the proposal from the PTRA and the decision of the sector Minister. The Universal Service objective is to make available and accessible, to the population, a minimum set of services taking into account the evolution of technologies, applicable to the whole territory according to the principles of equality, continuity, universality and adaptability.

According to the new law, licensed operators are required to contribute to universal access; to provide the necessary information to create a universal directory of subscribers and to provide free access to emergency services.

A Universal Service Fund (USF) is to be established and managed by PTRA. This Fund is to be financed by a fee levied on licensed operators and service providers in proportion to their turnover. The percentage turnover will be set by decree.

## **Guinea Bissau**

The “Telecommunications Basic Law” Decree n° 03-99, in article 2, defines universal access as a minimum set of services of a defined quality, accessible to all users in their geographical zone according to conditions defined at national level and at a reasonable price.

Article 12 of the said decree stipulates that the State is responsible for ensuring that universal service exists and is available. In view of the aforementioned, the provision of a fixed telephone service is guaranteed. These services may be provided by the State, a collective public or private entity.

The government may later identify other public telecommunications services as being part of the universal service.

Operators of public voice carrier networks should keep separate accounts of costs deriving from the universal service.

## **Liberia**

No noteworthy development in the reform of the telecommunication sector has been registered in Liberia because of the social difficulties experienced by the country. The Ministry of Post and Telecommunications, set up in 1979 by a law (MP & T Act 1979) is entrusted with the task of regulating the sector, including the management of the frequency spectrum, the establishment of technical standards, the issuing of licenses to operators and the presentation of the accounts of the historical operator (Liberia Telecommunications Corporation) to the National Assembly.

With the lull observed, efforts are beginning to take shape with a view to reforming the telecommunications sector in the country. Thus, the LTC (Liberia Telecommunications Corporation) management has proposed recommendations for the reform of the telecommunications sector in Liberia. These recommendations provide for the voting of the National Communications Act by the National Assembly.

The draft National Communications Act provides for the creation of a National Control Agency (Liberia Communications Commission) and the privatization of the LTC following a restructuring period. The draft NCA does not provide for anything specific regarding access/universal service.

## **Mali**

Order n° 99-043/PR-RM of 30 September 1999 relative to the telecommunications sector in the Republic of Mali defines the service and/or universal service in article 8, as a minimum set of defined telecommunications services of a given quality which should be provided or accessible to all users at a reasonable price.

Chapter II deals with Universal Access / Service . Article 12 of this chapter states that a decree shall determine the list of telecommunications services considered to be part of the service and/or universal access as well as the identity of the operator required to provide all the services considered as part of the service and/or universal access, throughout the country.

The law sets up the service and universal access fund under the responsibility of the Regulatory Committee to finance the service/universal access.

Telecommunications operators are required to contribute in the net cost of the universal service. The terms of this contribution will be determined by decree taken by the Council of Ministers.

Finally, any operator may be authorized to provide service and/or universal access throughout or in part of the territory. In this case, he/she is exempted from the obligation of contributing to the service and/or universal access.

## **Niger**

Order n° 99-45 of 26 October 1999 relative to telecommunications regulations, in its article one, defines the universal access to services as: “access to telecommunications services for all, under reasonable conditions, enabling those who have the means to subscribe and establishing a sufficient number of public access and community call centres for the others, in order to ensure that they would not have to travel long distances for that purpose.”

Section 9 of the law is devoted to universal access. It states that a decree shall determine the policies and priorities. The decree shall specify the services targeted, the minimum level of servicing, the minimum quality of service, the rules relative to the costing of universal access to services, the operators’ contribution procedures and the provisions concerning obligation netting in terms of universal access to services.

A fund for the universal access to services shall be set up. It shall be managed by the Regulatory Authority and is meant to compensate for the obligations relative to universal access to services.

The decree referred to in article 54 shall define the origin of the resources to sustain the fund, the terms of their allocation, accounting and financial management.

The Regulatory Authority shall define the optimum selection criteria applicable to the operators to ensure the universal access to services. Finally, the costs attributable to the obligations concerning the universal access to services are assessed by the Regulatory Authority, on the basis of an annual programme defined by the latter.

The specifications for the operators' license evaluate the contribution to the universal access costs at 4% with effect from 2002. A transitional provision fixes the contributions to universal service costs at 35 million and 70 million for 2000 and 2001 respectively.

## **Nigeria**

The Nigerian Communications Act, 2003 (2003 ACT N° 19) of July 2003 devotes its part IV to the provision of universal service.

In point 112, the universal service is defined as a system described and set up by the Nigeria Communications Commission (NCC) to promote a wide and comprehensive accessibility and use of telecommunications services throughout Nigeria by encouraging the installation of the network's infrastructures and providing applications and services to the "institutions", to "unserved zones" and to "poorly served zones" or to "disadvantaged groups" within the community.

The NCC shall define the notions of "institutions", "unserved zones", "poorly served zones" or "disadvantaged groups" within the community by taking into account the criteria listed in point 113.

Point 114 sets up a universal service provision fund dubbed "USP Fund". The fund will be sustained by resources from the State, part of the annual contributions paid to the NCC by operators with a license, donations, assistance loans etc.

The USP Fund is administered by a board (Universal Service Provision Fund Board Members). It comprises the Minister in charge of Telecommunications who chairs it, the chairman of the NCC board who serves as Vice Chairman, commissioners, a representative of the Minister in charge of Telecommunications, a representative of the Minister of Finance, a representative of the National Planning Commission, and four representatives of the private sector. An ad hoc committee will be set up to assist the board of the fund to carry out its duties.

Paragraphs 118 and 119 describe the other organs of the universal service provision fund, namely the USP Secretariat and the Investment Management Firm and their attributions.

## **Sierra Leone**

A reform of the telecommunications sector could not be carried out because of the country's social difficulties. Attempts are now being made and a draft telecommunications bill has been initiated. In its second part, the said bill provides for the creation of an autonomous regulatory body.

It stipulates that the regulatory body shall define annual objectives to ensure the provision of public service, particularly the accessibility of the basic telephone service to the largest possible number of users. The bill also stipulates that the regulatory body shall set up a universal access development fund to which service providers (public and private) will contribute through a tax to be fixed for that purpose.

## **Senegal**

Law 2001- of 27 December 2001 relative to the telecommunications code defines the notion of universal service in article 2 as follows: "providing all with a lifeline service consisting in a specified quality telephone service at an affordable price, as well as forwarding emergency calls, providing an inquiry service and the subscribers' directory in printed or electronic form, servicing

the entire territory by installing telephone booths in the public domain, in compliance with the principles of equality, continuity, universality and adaptability.”

In article 9, the telecommunications code defines the conditions under which the operators provide this service and its financing: “the operators of the telecommunications networks accessible to the public will participate conjointly in the missions and development expenses of the universal service and contribute in the financing of the said missions and expenses. The amount of their contribution is a percentage of the net tax-free turnover of the internetworking fees settled among public telecommunications network operators, fixed by decree. However, this percentage is expected to drop gradually as the competitive bid calls for the partial or total management of universal service provisions are examined by ART. The contribution referred to above is collected by ART and paid into the telecommunications universal service development fund, set up and attached to the latter. This contribution shall be recovered in accordance with the law governing the recovery of public debts. A decree shall determine the universal service development terms and the organization and operating rules of the universal service mentioned above.”

Article 1 of the draft decree being finalized defines the scope of the universal service which « consists in ensuring that all operators of telecommunications networks accessible to the public, in compliance with the principles of equality, continuity and adaptability:

- provide a connection to the telephone network accessible to the public in the service area zone and at a reasonable price, to any person who requests for it;
- service the national territory with public telephone booths installed in the public domain;
- provide each rural community with at least one public access point in compliance with the standards fixed by this decree, as well as the possibility to service the Regional Council and a health center;
- establish a public access point in each village;
- forward toll-free emergency calls to the nearest public services (police, gendarmerie, firefighters, emergency medical services);
- provide an inquiry service and a subscribers’ directory in printed or electronic form;
- comply with quality standards fixed at national and international levels for the provision of telephone service ».

It further states that additional services can be charged to the operator providing the universal service. These additional services concern the integrated services digital network (ISDN), the rented liaison services, advanced vocal telephone services, packet data services, Internet access and telex services.

The universal service provision conditions and the telephone network operators’ obligations are specified in the draft decree.

Article 5 of the draft decree institutes a universal telecommunications service development fund (FDSUT). It defines the fund’s resources which are provided by the public telecommunications network operators, public or private donors and territorial communities. The FDSUT is managed by the Regulatory Authority and has a management committee comprising ART director general (who is a resident of the committee), functional and operational ART directors, a representative of the President of the Republic, a representative of the President of the National Assembly, a representative of the Prime Minister, a representative of the Minister of Finance and the Economy and a representative of the public telecommunications network operators, a representative of telecommunications service providers, a representative of consumer organizations.

Chapter III of the draft decree is devoted to the servicing of localities. It provides for a three-year servicing programme, the procedure for the selection of operators in charge of the universal service, the conditions of subsidy remittance and the monitoring of the specifications of the said operators.

## **Togo**

Article 9 of section II of the Law n° 98-005/PR of 11 February 1998 relative to telecommunications stipulates that:

“1. Universal service refers to telecommunications services in the field of telephone and network operation services accessible to the public as well as services directly connected to the above-mentioned services which are considered as indispensable to the public because they are basic services.

2. A decree of the Council of Ministers defines the specific terms governing the provision of the universal service by referring particularly to:

- a) the telecommunications services in accordance with the above paragraph;
- b) the density of the lifeline service;
- c) minimum service quality;
- d) definition and price tailoring rules”

Decree n° 2001-195/PR of 16 November 2001 defines the specific terms of the universal telecommunications service.

The decree describes the consistency of the universal service as follows: “The Universal Service guarantees equality of access and treatment for all users, at an affordable cost. The universal service is understood as the obligation to:

- Transfer telephone calls and/or data from and to a subscription point,
- Install pay phones and telephone booths throughout the territory, and
- Provide a quality telephone service”.

Chapter 3 of the decree is devoted to the servicing of zones. It forecasts the density to be attained and the areas to be serviced every five years.

A universal service fund has not been established but the operators’ contributions to the universal service are paid into a special account managed by the Regulatory Authority (ART&P).

Contributions to the universal service come from operators with clearance to establish and/or operate a network accessible to the public. Decree n° 2001-007 of 7 February 2001 fixes the fees owed by the operators and telecommunication service providers and distributes these charges between the Treasury, Regulatory Body and universal service.



## Annex B

### Universal Access/Service Best Practice Guidelines<sup>83</sup>

#### 1 CREATING AN ENABLING REGULATORY AND POLICY ENVIRONMENT: THE ROLE OF GOVERNMENTS AND REGULATORS

**Guideline 1.1** – Governments must, at the highest level, identify ICT as a tool for socio-economic development. In doing so, government should designate a national focal point (Ministry, government department, personality) for ICT development.

**Guideline 1.2** – 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.

**Guideline 1.3** – Governments and NRAs must undertake to develop their communications frameworks through sector, intuitional and legislation reform which is in line with international best practices, but sufficiently tailored to meet local requirements.

**Guideline 1.4** – Governments and NRAs must include all citizens, and in so doing must engender their universal access/service policies and must include all elements of the population regardless of ethnicity, socio-economic level or geographic location.

#### 2 DESIGNING POLICIES AND DETERMINING REGULATORY REFORM MEASURES

**Guideline 2.1** – Formulate a national policy that identifies appropriate and realistic universal access/service objectives that take into account the differences between universal access—public access to ICTs—and universal service—household or private access to ICTs.

**Guideline 2.2** – Conduct periodic public consultations to the extent possible with stakeholders to identify their needs and modify universal access/service policies, regulation and practices accordingly.

**Guideline 2.3** – Design universal access/service policies, regulations and practices in order to create incentives for the private sector to extend universal access to communications services.

**Guideline 2.4** – 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.

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<sup>83</sup> Adapted from Universal Access Regulatory Best Practice Guidelines adopted by Regulators at the 2003 ITU Global Symposium for Regulators (GSR) and Best Practice Guidelines to achieve low cost broadband and Internet connectivity adopted at the 2004 ITU GSR. [http://www.itu.int/ITUUD/treg/Events/Seminars/2003/GSR/Documents/BestPractices\\_E\\_31.pdf](http://www.itu.int/ITUUD/treg/Events/Seminars/2003/GSR/Documents/BestPractices_E_31.pdf) - [http://www.itu.int/itunews/manager/display\\_treg.asp?lang=en&year=2005&issue=01&ipage=guidelines&ext=html](http://www.itu.int/itunews/manager/display_treg.asp?lang=en&year=2005&issue=01&ipage=guidelines&ext=html).

As revised and adopted by the 3<sup>rd</sup> WATRA OGM, September 2005, Accra, Ghana.

**Guideline 2.5** – Establish a fair and transparent telecommunication regulatory framework that promotes universal access to ICTs. Allow the market to address universal access/service to the greatest extent possible and only intervene where the market has, or is anticipated to, fail. This includes:

**Guideline 2.5.1** – Promoting technologically neutral licensing practices enabling service providers to use the most cost-effective technology to provide services for end users.

**Guideline 2.5.2** – Adopting a transparent and non-discriminatory interconnection framework of interconnection rates linked to costs.

**Guideline 2.5.3** – Reducing regulatory burdens to lower the costs of providing services to end users.

**Guideline 2.5.4** – Promoting competition in the provision of a full range of ICT services to increase access, affordability, availability and use of ICTs.

**Guideline 2.6** – Where it is necessary for NRAs and policymakers to intervene to facilitate the delivery of universal access/service:

**Guideline 2.6.1** – public access strategies should be explored in addition to private, universal service, strategies

**Guideline 2.6.2** – Both pay and play strategies should be employed, but where possible operators should be incentivised to roll out to rural, remote and low-income populations and areas.

**Guideline 2.6.3** – Countries can use regulatory reform as the first step in achieving universal access, recognizing that further steps may be necessary to achieve ubiquitous access to ICTs, e.g., in rural areas or to users with special needs.

**Guideline 2.6.4** – Appropriate licensing schemes for rural service providers could be granted to meet the needs of un-served and under-served areas.

### **3 PROMOTING INNOVATIVE REGULATORY POLICIES**

**Guideline 3.1** – Promotion of access to low cost broadband interconnectivity should be integrated from the local level to the international level. Governments, business, non-governmental organizations and international organizations should be involved.

**Guideline 3.2** – Adoption of regulatory frameworks that support applications such as e-education and e-government.

**Guideline 3.3** – Adoption of policies to increase access to the Internet and broadband services based on their own market structure and that such policies reflect diversity in culture, language and social interests.

**Guideline 3.4** – NRA should consider working with stakeholders to expand coverage and use of broadband through multi-stakeholder partnerships. In addition, complementary government initiatives that promote financially sustainable programs may also be appropriate, especially in filling in the market gap that may exist in some countries.

**Guideline 3.5** – Adoption of regulatory regimes that facilitate the use of all transport mechanisms, whether wireline, power line, cable, wireless, including Wi-Fi, or satellite.

**Guideline 3.6** – NRA to explore programs that encourage public access to broadband and Internet services to schools, libraries and other community centres.

**Guideline 3.7** – NRA to implement harmonized spectrum allocations consistent with the outcome of ITU Radiocommunication Conference process and each country’s national interest. Participation in this well-established framework will facilitate low-cost deployment of equipment internationally and promote low-cost broadband and Internet connectivity through economies of scale and competition among broadband vendors and service providers.

#### **4 ACCESS TO INFORMATION AND COMMUNICATION INFRASTRUCTURES**

**Guideline 4.1** – Provide services in a competitive framework, using new technologies that offer both innovative services and affordable pricing options

**Guideline 4.2** – Promote affordable ICT equipment could include national manufacturing of ICT equipment, reduced customs tariffs and duties, and end-user loans to foster affordability of ICT equipment.

**Guideline 4.3** – A full range of public access options can be developed, including the creation of public telecentres and multi-purpose community centres.

**Guideline 4.4** – Local input (including the content useful for local populations) into projects increases their relevance and therefore their long-term financial sustainability.

**Guideline 4.5** – Education and training programmes should be instituted to encourage the use and impact of ICTs on local people on the benefits of ICTs and their use increases their long-term financial sustainability

#### **5 GUIDELINES IN REGARD TO PROVIDING SUBSIDIES: FINANCE AND MANAGEMENT OF UNIVERSAL ACCESS POLICY**

**Guideline 5.1** – Any funding or subsidies provided must be targeted and determined and delivered in a manner that is transparent, non-discriminatory, inexpensive, and competitively neutral.

**Guideline 5.2** – Subsidies must be targeted.

**Guideline 5.3** – Subsidies can be provided using several means including:

**Guideline 5.3.1** – Universal service funds should be developed as a mechanism within a broader market-oriented approach to achieving universal access.

**Guideline 5.3.2** – Universal service funds can be financed by a broad range of market players, managed by neutral bodies such as regulators, and be used to kick-start public access projects that meet the needs of the local community.

**Guideline 5.3.3** – Governments may consider a full range of other financing mechanisms. .

**Guideline 5.3.4** – Competitive minimum subsidy auctions could be used, as an option, to reduce the amount of financing necessary for public access projects financed by a universal service fund.

**Guideline 5.3.5** – Public access projects can be designed to achieve long-term financial self-sustainability, especially where consideration is given to innovative low-cost technologies.

#### **6 GUIDELINES FOR COOPERATION**

**Guideline 6.1** – Cooperation must be explored on several levels:

**Guideline 6.1.1** – Between the private sector and communities so that where possible the market can deliver universal access/service;

**Guideline 6.1.2** – Between communities, governments and the private sector to ensure that the access gap is dealt with in a manner that is relevant to communities

**Guideline 6.1.3** – Within government to ensure that the full benefits of ICTs, beyond infrastructure and technology, and extending to health, education, agriculture and other sectors are accrued.

## **7 GUIDELINES ON MONITORING AND REVIEWING POLICIES**

**Guideline 7.1** – Countries should adopt measurable targets for improving connectivity and access in the use of ICTs which can be based on distance, population density or time taken to have access to ICTs .

**Guideline 7.2** – Countries should review universal access/service policies, regulations, targets and practices periodically to adapt to the evolving nature of ICT services and the needs of end users.

## **8 EMERGENCY SERVICE**

**Guideline 8** – Countries should endeavour to provide free access to emergency service from end user terminals where practicable.

## Annex C

### Universal Access/Service Recommendations

It is recommended that NRAs and policy makers attempt to answer all of the questions posed in this paper before finalising their universal access/service policies, which feed into the design of their legislative and institutional arrangements. A few key themes and recommendations have been taken from the report for ease of reference and to highlight steps needed to build a harmonized regional ECOWAS/UEMOA approach to ICTs.

#### **Step 1: ECOWAS-UEMOA member states should facilitate telecom sector reform**

NRAs and policymakers should take steps to encourage the liberalization and promotion of regulation in the communications sector. Policy measures such as introduction of competition, tariff reform, fair interconnection agreements, and transparent licensing are *fundamental* to achieving universal access.

#### **Step 2: Identify or approximate the market efficiency gap**

NRAs should identify the market efficiency gap, and by default the market access gap so that universal access/service strategies can be designed in a targeted manner which allows the private sector to provide services where possible.

#### **Step 3: Identify and promote universal access/service opportunities through market studies**

It is important that the nature of the universal access/service challenge is properly defined in order to develop targeted universal access/service strategies. As such, research and market studies should be encouraged by NRAs and policymakers at national and regional levels to enable decisions on technology, affordability and levels of obligations, amongst others.

#### **Step 4: Development of basic standards and steps for universal access/service policy development**

Harmonization or standardization of essential components for universal access/service initiatives throughout the region in order to guide policy makers, NRAs, donor agencies, research institutions and private sector companies is important. The existence of a basic level of standards which all universal access/service strategies must aspire to should take into account.

#### **Definition of Targets:**

- Universal access should be the primary goal of ECOWAS-UEMOA Member States
  - All communities of over 200 inhabitants should have telecommunications facilities in their localities.<sup>84</sup>
  - Public telephones should be installed so that no citizen should have to walk more than 3 kilometres for phone access.<sup>85</sup>
- Universal Service must also be a key consideration for the longer term:

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<sup>84</sup> As agreed at the Validation Workshop on Universal Access/Service, held in Abuja, Nigeria, 28-30 September 2004.

<sup>85</sup> Idem.

- Regional teledensity of 3 percent (fixed) and 7 percent (mobile) to be achieved by 2008.<sup>86</sup>
- The divide between rural and urban areas must be reduced annually
- Universal Access/Service targets should be measured annual nationally and reviewed by ECOWAS-UEMOA every three years.

#### **Definition of “Basic” Services**

- The definition must evolve from time to time and must thus be put in sub-ordinate legislation which can give NRAs more flexibility and can be changed more readily than definitions contained in an Act.
  - At a minimum voice-grade services and ISDN lines should be included in the definition
  - Access to emergency, operator and relay services must be included in the definition of basic.
  - Advanced services must be added to the basket of services, as an when appropriate
- Public operators must provide access to emergency services and directory services. Directory services must be updated periodically.

#### **Obligations and Incentives**

- NRAs should seek to impose market-based obligations so that operators are *incentivised* to rollout to underserved areas at the least cost to governments, and on a commercial basis

#### **Step 5: Encourage the development and implementation of Universal Service Funds**

NRAs, policymakers and operators should promote and support the establishment of universal access/service funds to assist in financing selected universal service operators or segments of the population. It should be ensure that the Funds are not just created in legislation, but are appropriately structured with respect to administration and governance, amongst other things.

#### **Structure of the Fund**

- Given human and financial resource constraints in the region, and the complementary nature of regulation and universal service provision the Universal Service Agency/Administrator should be housed within the NRA;
- There should be clear separation of the management and accounts of the Administrator/Agency from the NRA. A separate department should be established within the NRA to manage the Fund.
- Accounts of the USF should be independently audited on an annual basis, and the results of the audit should be made publicly available.

#### **Contributors to USF**

- The Fund should be financed from state, donor, and operator contributions. Generally, operators who hold telecommunications licences, both dominant and non-dominant, should contribute to the USF. Operators who provide services in a sector that will benefit from USF monies should be included in the scope of contributors (e.g. broadcasters, publishers, etc if regulatory/legislative convergence has occurred).

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<sup>86</sup> Idem.

- Levels of operator contributions will be determined nationally through an analysis of the demand for services and of the market access gap. The method of collection of monies must be stipulated in regulations/directives.
- Operators who are licensed specifically to provide universal service (regional operators, rural licensees) or provide services in locations and to users who fall within the scope of the universal service mandate should be exempt from contributing to the Fund or should pay only a nominal fee.
- Levels of subsidies should be determined through analysis of USO costs, competitive bidding processes, or a combination of both approaches and beneficiaries may include:
  - Operators with universal service obligations, only if universal service obligation costs can be properly calculated;
  - Rural/underserved area licensees;
  - Educational institution;
  - Health care facilities and institutions
  - Projects and Programmes (e.g. telecentres, MPCCs, local content development, training)

***Step 6: Identify multi-sector partnerships***

Partnership across sectors and between government and private sector, as well as within government should be encouraged in pursuit of a universal access policy that will impact across the economy and using all forms of ICTs.

***Step 7: Focus on gender and universal access, and on youth and universal access***

A focus on historically marginalized population groups will ensure that greatest impact of universal access/service policies.

***Step 8: Focus on applications and services, as well as infrastructure***

NRAs and policymakers should consider strategies that address education, language, content and broadly the relevance of ICTS to communities to ensure the uptake of ICTs for socio-economic development.

