Universal Access and Universal Service Funds: insights and experience of international best practice

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1 THE INSIGHTS AND EXPERIENCE OF INTERNATIONAL PRACTICE

1.1 INTRODUCTION

This paper provides an overview of Intelecon Research & Consultancy Ltd.'s recent experience with Universal Access (UA) programs and the distribution and management of Universal Service Funds (USF). Given the rapidly changing telecommunications landscape in most developing countries, and the importance national governments are now placing on the creation of effective national UA strategies that meet the communication needs of their citizens, Intelecon has compiled a snapshot of current best practices and trends that help to place current methodologies and practices in context.

The objectives of this paper are:

1. To identify and briefly summarise the current trends in universal access and the practices and emphasis of universal service funds;
2. To include examples of how the private sector is participating in meeting universal access objectives, including examples of franchising and other small businesses participation in the provision of telecommunications and Information and Communication Technology (ICT) to low-income and rural communities without subsidies; and
3. To provide some insights into fund management.

For a more comprehensive summary of international best practice, readers are encouraged to review the International Telecommunication Union (ITU)'s latest publication on Universal Access (UA) and Universal Service Funds (USF), *Trends in Telecommunication Reform 2003, 6th Edition Promoting Universal Access to ICTs - Practical Tools for Regulators*[1], to which Intelecon contributed key chapters.

Of interest to some readers will be the inclusion of a detailed case study of Uganda's experience to date with its US fund, known as the Rural Communications Development Fund (RCDF), the most advanced fund in Africa.

1.1 KEY TRENDS

Based on its experience with Universal Access (UA) and Universal Service Fund (USF) programs in over countries around the world, Intelecon has identified two key trends:

1. **The emergence of mobile telephony as a highly demanded service.** Throughout the developing and developed worlds, mobile has rapidly supplanted fixed service as the

1. Available on the world wide web at http://www.itu.int/publications/sector.aspx?lang=e&menu=categories&sector=3

technology of choice, reaching deep into rural areas and becoming a means to provide universal access to voice services; and

2. **The integration of Internet service and ICT as crucial components of UA.** Recognising the increasing role that the Internet and ICT have taken throughout the world, regulators have responded by incorporating them into the definition of universal access and making them part of USF programs. Because Internet provision is much more complex in less developed areas, some failures have been observed, but clear opportunities for taking steps towards improved Internet infrastructure and service provision are available.

Both of these trends have increasingly gathered momentum over the last decade. While Internet and ICT have been present in Africa and other developing countries for approximately 10 years, the developments in mobile service expansion have really only accelerated in Africa since the year 2000. As a result, many countries that had drafted or established their communications laws and regulations prior to the year 2000 are now faced with new issues and opportunities which may not have been fully appreciated at the time.

1.2 COUNTRIES WITH UNIVERSAL SERVICE FUNDS IN PLACE

Table 1-1 provides a list of countries utilizing Universal Service Funds as a means of stimulating investment and service levels for rural areas. While the total number is still somewhat limited, well over 30 countries now have Funds.

Table 1-1: Countries with Universal Service Funds	
Latin America	Chile, Peru, Colombia, Argentina, Brazil, Guatemala, Dominican Republic, Bolivia, Nicaragua
Africa	Burkina Faso, South Africa, Uganda, Nigeria, Tanzania, Mozambique, Zambia, Madagascar
Asia	Malaysia, India, Nepal, Sri Lanka, Mongolia, Indonesia, China,
Europe	Russia, Hungary, Poland
Australasia	Australia, New Zealand
North America	USA, Canada, Mexico

1.2.1 Advanced country practice – Compensation for losses and ICT support

Although most European Union countries – particularly those with relatively small geographical area and high population densities - have not considered a universal service fund to be necessary, a few advanced countries with large geographic areas and consequently much higher costs to serve rural areas, do have funds, as shown in Table 1-1. In the USA, Canada, Australia and New Zealand, the funds are, of course, geared towards advanced country universal service targets of achieving 100% residential telephone penetration. Initiatives in these countries also include financial support for Internet and ICT projects to ensure that small population centres and rural areas have the same opportunities as urban areas.

In most of these cases also, the subsidies are not distributed to recipients competitively but are granted according to formulae for compensating operators already serving high cost rural areas within their operating territory or proposing to expand to high costs areas[2]. In the case of ICT projects, the financial support usually requires end-user applicants – schools, community groups and other users – to prepare applications or proposals according to a standard procedure. Subsidy awards are made when certain qualifying conditions are met. The applicants must also typically show:

- a financial contribution by themselves or from the local community; and
- that the project is sustainable, after the initial contribution, without need for further subsidy in the medium to long term.

ICT projects in developing country cases, such as Uganda, Nigeria and Mongolia, which are discussed later, include similar procedures for small-budget ICT projects, whereas the larger telephony projects are usually tendered competitively on a least-subsidy basis and do not include support for ongoing operational expenses.

1.2.2 Examples of competitive subsidy disbursement

The idea of making finance available *competitively* under a lowest-subsidy tender, and offering the possibility of new licenses for rural operators, commenced in 1994 with the establishment of Chile's Fondo de Desarrollo de las Telecomunicaciones. These funds were established as the countries' telecommunications sectors were liberalised, to support the extension of services into areas that would not otherwise have been reached.

Among developing countries, the funds generally promote public access to telecommunications and the Internet. The contributions required from operators are most typically in the range 1-2% of operator revenues, as shown in Table 1-2.

Table 1-2 Universal service levies

Country	% contribution by operators	Type of program US = Universal Service UA = Universal Access
Malaysia	6%	US & UA
India	5% (out of high license fees)	US & UA
Colombia	5%	UA
USA	<4% (plus state levies)	US
Russia	2%	UA
Burkina Faso	2%	UA
Dominican Republic	2%	UA
Canada	1.5% (plus federal contributions)	US
Peru	1%	UA
Uganda	1%	UA
Nigeria	1%[3]	UA

2 The Malaysian Fund operates similarly to those of the advanced countries, though the telephony penetration targets are, of course, not quite as high.
3 Nigerian communications Commission (NCC) is expected to make a final decision in 2005, but it is expected to be 1% of operator revenues

To date at least seven countries have licensed rural operators through such funds. Several other funds in Latin America[4] are at various stages of commencing operation or are planning to do so. In Asia and CIS, ***India*** and ***Nepal*** have held competitions for funds, while ***Mongolia*** is implementing a pilot competition in 2005 and ***Russia*** is also bringing its Universal Service Fund into operation this year.

Table 1-3 summarizes the experiences of the first five Latin American funds. Whereas these have important lessons for the rest of the world, their situation and service targets differed widely from the cases now being developed in Africa. The most important difference is the relative remoteness of the localities that were targeted for subsidy compared to the universal access needs in Africa. In Latin America, the existing fixed networks were much more developed, teledensity was already much higher, and the Funds focused on bringing public access services to the remaining unserved localities. These unserved localities were typically very remote communities and had populations of a few hundred people only. The technical solutions were a combination of fixed multi-access wireless and satellite technology.

Table 1-3: Latin American Funds

Country	Name	Source of Finance	Period	Localities served	Maximum subsidy available (US$m)	Subsidy granted (US$m)	Subsidy per locality (US$)
Chile	Fondo de Desarrollo de las Telecomunicaciones	Government budget	1995-97	4,504	24.2	10.2	2,256
			1998-99	1,412	14.4	9.8	6,919
			2000	143	1.9	1.8	12,727
Peru	Fondo de Inversión en Telecomunicaciones (FITEL)	1% Operator levy	1998	213	4.0	1.7	18,800
			1999-2003	1,937	50.0	11.0	5,700
			2002-4	2,290	59.5	27.8	12,100
Colombia	Fondo de Comunicaciones (Compartel)	5% Operator levy & Government contribution	1999-2003	6,865	70.6	31.8	4,600
Guatemala	Fondo para el Desarrollo de la Telefonía (FONDETEL)	Spectrum auctions	1998	202	n/a	1.5	7,587
			1999 (2)	1,051	N/A	4.5	4,282
Dominican Rep.	Fondo de Desarrollo de las Telecomunicaciones (FDT)	2% Operator levy	2001	500	3.8	3.4	6,800

Notes: (1) Implementation delay due to subsidy winner disqualified & subsidies awarded to second bidders.

(2) Actual fund disbursements, excluding subsidies won but network not implemented due to operator failure

4 Argentina, Brazil, Bolivia, Ecuador and Nicaragua

In Africa on the other hand, the fixed networks are poorly developed and mobile technology is now more likely to play a key role, even though multi-access fixed technology has played an important role previously. Another important difference is that, in virtually all countries in Africa, we do not expect the subsidy requirements to approach the levels required for Latin America, for reasons that will be discussed.

Uganda, with its Rural Communications Development Fund (RCDF), is the first country in Africa to hold a competition for universal service to telecommunications and Internet services. But it is currently only in the midst of its first major tenders, while several others are close behind. ***Nigeria*** is in the midst of a pilot process. The fund in ***South Africa***, administered by the Universal Service Agency, was on a smaller scale and provided finance to community telecentres only. The Universal Service Fund in South Africa is now being put into operation to support new licenses in rural areas which have lower than average market penetration by fixed or mobile services.

1.3 THE CHANGING MARKET CONTEXT

The African examples of universal service programs are all taking place since mobile communications became the dominant force in telecommunications. In fact, in the African setting, programs must evolve along with the changing market and thus universal service targets are changing. For example, in the Ugandan case, the original program objectives have already been met by existing operators in many of the geographical areas targeted. As a result, it has become appropriate to increase the target level of service provision in mid stream. This may also prove to be the case in Nigeria, where the incredibly rapid pace of the network growth of the four mobile companies is changing the situation rapidly.

1.3.1 The pre-eminence of mobile

In 2003, ITU statistics showed that mobile telephony comprised approximately 72.7% of all telephone subscribers in sub-Saharan Africa[5]. Approximately 13 million new GSM subscribers entered the telecommunications markets in Africa in 2003 and mobile phone companies in Africa generated over US$ 10 billion in revenue, a figure which is increasing up to 30% annually. In Uganda, Nigeria and Mozambique, which are all establishing Universal Service Funds, mobile service now accounts for over 90% of total lines.

Both demand and supply factors explain these developments. In response to the fact that fixed service was often not available without submitting to wait lists and other lengthy and frustrating procedures, the general public has opted for mobile and discovered it to be the most convenient, affordable[6] and flexible network for voice telephony. The demand led to economies of scale for

5 African Telecommunication Indicators 2004, I.T.U

6 Recent studies by Intelecon for a wide cross-section of countries have shown that for low income users, the entry cost for pre-paid mobile service (i.e. the cost of the mobile handset and SIM card) is typically lower than the initial installation price for fixed service and involves no application bureaucracy. Also the minimum monthly cost to stay connected on mobile service, when making only a few calls, is often cheaper than the monthly rental of a fixed line. Finally, for people making long distance calls (the typical case for many poorer people), the cost of long distance calls is now often cheaper

the operators, who discovered that the lowest cost, most efficient network to supply (e.g. in terms of time required to deploy a system, have it operational and secure new customers) is mobile. This has led to further economies of scale, intense competition and lower prices that have fuelled more demand and accelerated development. While fixed networks still remain necessary for those who require data transmission capacity, the explosive expansion of GSM networks has become a worldwide phenomenon.

1.3.2 The advantages of mobile as a lower cost solution for universal service

The African experience over the last few years has demonstrated many features of mobile network services which explain their rapid growth and also point to important benefits in the context of universal service and universal access, namely:

- Public access and increasing private service goals can be met with the same investment in a mobile network. By contrast, with fixed networks in low income areas, there is little chance of much private service demand arising. Thus, all of the investment has to be born by the universal access lines, which are typically the public payphone and a few institutional lines
- The result of mixing public access and private service provision is that universal access can be provided more economically through mobile networks. Within the capacity limits of each base station, every additional customer improves the operator's financial position. Costs per user thus decrease continually as more mobile users share the service.
- Providing additional geographic coverage outside of cities, along major roads and into rural areas is an important objective for mobile operators since it offers benefits to urban customers who travel throughout the country as well as to those who wish to call their rural relatives.
- Mobile operators are demonstrating that they understand the financial benefit of geographical expansion in the African context, even if users in rural areas make only a few calls. It is well-known that urban relatives generate a large percentage of the revenue that can be attributed to rural coverage, from making calls to rural users. Attractive interconnection rates for fixed-to-mobile calls thus generate a considerable revenue stream and investment incentive for the mobile operator.
- Mobile operators are typically not encumbered by heavy tariff regulation. Their growth has and is taking place in the context of minimal price regulation, allowing them flexibility to meet the various stages of their operating, investment and expansion requirements and plans. For example, tariffs are typically higher in the network build-out phase but drop considerably later due to increasing competition. Most regulators have allowed this to happen, despite clamour from some consumer advocacy groups (e.g. in Nigeria), because they have understood that tariffs reduce over the long term in response to competitive pressure and the need to continue growth by attracting lower-income customers.

on the single-tariff mobile network than on the fixed network. For these reasons the mobile service is both preferred and lower cost for many customers.

- As a result of this process, mobile tariffs ultimately become more attractive and affordable to low-income people because of innovative price packaging, the lowering of entry barriers by operators, and the availability of low cost handsets.
- Pre-paid service eliminates costly customer administration: there is no credit checking, no billing or money collection, and no exposure to bad debt, which is a chronic problem for fixed operators in Africa. This has the effect of reducing operating costs considerably and providing the operators with cash up-front, thus allowing the savings to be passed on to the customers and used to encourage low income low revenue customers to join the network[7].
- Pre-paid service is also more attractive to users and especially low income users because there are fewer bureaucratic or costly entry barriers.
- Users have learned to creatively use the technical features of mobile communications – caller identification, the ability to "beep" and call back, and short message service (SMS) - to reduce their costs or to transfer them to their higher income relatives, such that they can have access without having to make much expenditure.
- Operators have recently introduced a range of service products and features which enhance the attractiveness of mobile communications at the low end of the market and thus draw in low-income users. Examples of these include per-second billing, easy remote air-time credit transfer between customers, "call me" messaging and SIM cards that require virtually no call activity for users to retain their number.

1.3.3 Mobile public access payphones, kiosks and franchise businesses

Mobile technology now reaches more users than fixed networks through the use of mobile public payphones and public access businesses. These are appearing in a number of ways, including:

- individual entrepreneurs reselling airtime;
- mandated obligations to provide public access in some mobile licenses;
- franchise businesses; and
- managed networks of small entrepreneurs.

The payphone technology itself ranges from mobile handsets to desk telephones in kiosks and wall-mounted outside payphones. Table 1-4 provides examples of the various types of mobile public payphones.

7 Fixed operators seem to have finally caught on to the benefits of pre-paid. Examples of fixed operators having introduced pre-paid recently include N-Soft in Gabon, Brasil Telecom, PLDT Philippines, Telmex in Mexico, CANTV in Venezuela, and TDM in Mozambique.

Table 1-4: Mobile payphones and access businesses	
Country & mobile operator	**Type of payphone**
Bangladesh, GrameenPhone	Women are recruited by Grameen and given a loan to buy a handset, battery, antenna, signage and airtime. They operate as village phone operators (VPOs) who offer a standardised customer product and price. 125,000 VPOs recorded as of June 2005.
Uganda villagePhone, MTN	Women and men are recruited as VPOs by up to nine micro-finance institutions which are, themselves, recruited by MTN Uganda. VPOs are given a loan to buy a VP equipment kit (as above), and offer a standardised customer product and price.
Nigeria, MTN	MTN Nigeria launched a community phone project named "Ogene", using micro-credit loans to women entrepreneurs as above, to provide public access using GSM handsets. The initiative launched operators in 4 states, and was in the process of launching additional operators into the northern states in 2005.
India, Spice Telecom	The mobile operator recruits small entrepreneurs to operate mobile phones as payphones
South Africa, MTN & Vodacom	Both mobile operators are obligated to provide GSM fixed-wireless public payphones in container kiosks
Mozambique	Both Mcell and Vodacom have franchised networks of GSM desksets located in kiosks or small stores offering a standard priced payphone product.
Colombia	As part of the COMPARTEL Fund-supported program, mobile payphones are installed in the least remote communities.
Ecuador, BellSouth	Mobile payphones are housed by restaurant and shop owners, gas stations and similar establishments.

In some cases the examples have emerged in purely commercial fashion, however, in at least three cases (South Africa, Uganda and Colombia) mobile payphones and public access businesses have been used either to fulfil regulatory obligations or to meet the requirements of a USF competition.

The clear trends in the payphone market are two-fold: 1) that African mobile operators will increase their use of mobile payphone concepts to reach rural areas; and 2) that regulators and Universal Service Funds will make use of them as desirable public access providers. The most appropriate form of the technology and operational modality will be decided on a case by case basis. However, it appears that the type of payphone that is managed by a kiosk owner or franchisee will hold the most promise since these are best able to take advantage of some of the more personal and "pro-poor" features of mobile operators. Moreover, they enable rural people to make very low cost calls, receive messages and enjoy the benefits of call-back from their urban relatives.

1.3.4 Operator franchising and micro-credit

"Telecentre" payphone operator franchise-style systems are present in a number of African countries including Burkina Faso, Morocco, Mozambique, Senegal and South Africa. In most of these cases, the entrepreneur or franchisee has to invest in the telephone equipment, typically at a cost of up to US$ 500 to get started. In rural areas, the cost could be higher, because special antennas and independent power supplies are required. Thus the cost could possibly be a hurdle for potential entrepreneurs to overcome in some rural areas.

Table 1-4 includes at least three cases where micro-credit loans are used to enhance the possibility that poorer rural people could become the franchisees. The challenge of extending telephone services to rural localities has lessened through the initial experience and adaptation of Bangladesh's GrameenPhone Village Phone[8] model in Africa. The model integrates the provision of rural telephony services with the interest and support of rural-based micro-finance organizations and their clients. Since its inception in 1997, the GrameenPhone example has led to the establishment of over 95,000 rural village operators in Bangladesh, the majority of them women, all through a mechanism whereby rural micro-credit members accept loans for a mobile phone, with supporting equipment, valued at approximately US$ 250. The women then provide public access telephony to villagers in their communities. The program's success in Bangladesh has been followed with the 2004 deployment of the MTN villagePhone program in Uganda[9], which currently has more than 1,500 (mostly women) operators in 49 of the country's 56 districts. One of the program sponsors, Grameen Foundation, aims to deploy a total of 5,000 village operators. A similar though less formal initiative has been operated in Nigeria since 2002; approximately 90 women operators have been launched since the program began.

1.4 STRATEGIC PROVISION OF INTERNET AND DATA SERVICES

As previously noted, universal service programs now include Internet service provision in the basic strategy. Included within this is, the consideration of schools and other Government and non-Government institutions as possible recipients, and the provision of public access through cybercafés or multi-purpose community telecentres (MCTs).

In a recent study undertaken for "African Connection" under the World Bank's InfoDev Program[10], Intelecon reviewed examples of existing ICT development within universal access programs in Peru, Chile, Colombia, Mexico, India, South Africa, Uganda, as well as MCTs in Mozambique and the experience of general ICT development in 10 African countries.

The results of international experience for Internet and ICT are much less clear than in the case of telephony to date. In fact, there is a mixture of success and failure and very few developing countries are yet able to confidently report a fully successful strategy. The reasons for this include the following:

- The Internet market itself is not as attractive and profitable as voice for the service providers; many Internet Service Providers may be financially unstable, even in urban areas;

8 see GrameenPhone Village Phone information at http://www.grameenphone.com/modules.php?name=Content&pa=showpage&pid=3%3A11%3A1&submit.x=6&submit.y=4

9 see http://www.mtnvillagephone.co.ug/index.htm

10 "The Next Step: A Rural ICT Program for Rural Africa", January 2003. The Program was development based on study of the following 10 countries: Algeria, Cameroon, DR Congo, Kenya, Morocco, Nigeria, Senegal, South Africa, Tanzania, and Zambia. Available on the world wide web at http://www.infodev.org/files/1066_file_Rural_ICT_Toolkit_PUBLICATION_VERSION.pdf

- Internet service provision in developing countries is still confined almost exclusively to main urban areas, and its development outside the main centres is hindered by the lack of computers amongst rural institutions and by the absence of reliable power supply;
- Internet service provision into regional and rural areas is also typically constrained by a lack of competitively priced long distance bandwidth and by high costs for international access to the Internet, sometimes due to a remaining monopoly over the international gateway;
- Institutions which might benefit the most from universal access (e.g. schools) typically have insufficient budgetary resources, either for computers which would make them "Internet ready," or for sustaining payments to ensure a sufficient quality of Internet service;
- Government institutions which could make use of Internet access outside of the main urban centres are also mostly in the very early stages of ICT development and have not yet adopted any fee-for-service approaches into their sectoral budgets;
- Most of the Internet public access models promoted by the ITU and by international donor agencies - i.e. multi-purpose community telecentres (MCTs) - have to date only had a short run pilot experience, but it is enough to provide the general conclusion that they are largely unsustainable in the long run without continued donor support; that they would be a drain on resources; that they are less than adequately managed; and thus are not a replicable model for rural Africa.

The general conclusions in the African Connection Study[11] and as observed and/or advised by Intelecon in all of the development country examples cited, are that:

1. *The best ICT strategy should focus, firstly, on the provision of Internet Points of Presence (POPs) at the main rural population centres to enable rural intermediary organisations to have access to the Internet.*

   Considering demand for advanced ICT services, content and applications, and, in particular, the capacity to benefit, it is clear from the review of existing projects and from demand analyses carried out in several countries that the strongest demand and best use of ICT can be made by an *intermediate layer* organisation, not by the rural populace inhabiting villages. The best chance for sustainability and eventual diffusion of ICT happens when projects enable rural intermediaries governing or serving the rural community to become more efficient. Examples of such intermediaries includes bank branches, micro-credit organisations, community development organisations and NGOs, civil society organisations, farmers associations, hospitals, local government and radio stations. However, this needs to be complemented by long-term capacity building and outreach initiatives aimed at the rural population.

11 Ibid

2. *Schools are worthwhile targets for ICT and Universal Service Funds because they have the potential to develop a new generation of Internet users.*

   Many countries have "schoolnets" and initiatives providing ICT and training to schools, with at least some reaching into rural schools. There is no doubt that this is crucial and one of the few areas where commercial viability should be seen as less important. Among countries studied in Africa, only South Africa, Morocco, Senegal and Uganda have had educational projects definitely reaching into rural schools. However, it is possible to mobilise donations and support for ICT in schools to complement the possibility of support from the Universal Service Fund for Internet service provision. As well, there are several options for improved sustainability, e.g. charging a small fee from students, offering training and services to the general public.

3. *"e" activities must be stimulated and given practical expression by the Government under its national ICT policy – to generate priority and budgets for this purpose in government, banking, commerce, health and learning.*

   All of these activities are to date limited in scope in Africa, outside a small number of countries such as South Africa and Morocco. As in the education sector, the Government's role is foundational and in most cases, it is lagging. The Government should look to place itself in the position of being a model user, creating better governance as well as demand among the populace for ICT services. It needs to provide certain administrative services, including forms, contact information, legislative developments, land registration, examination results, etc. by electronic means, to create the need for people to use the Internet. To date, this is not widespread, though some development agencies are focusing their attention into this area. Until these activities are underway, there is little point in promoting Internet service provision below the main rural population centres.

4. *Governments and donors should become model users rather than network builders.*

   In a number of countries, it is observed that Governments do not sufficiently encourage the growth of their own ISP industries. Both governments and international donors should refrain from building their own "private" networks and facilities when they could stimulate the growth of the commercial Internet service industry, and a greater level of competition, by tendering for and outsourcing or buying network services from commercial enterprises. They could even buy ICT training and Internet telecentre services from commercial cybercafés, encouraging them to develop and diversify.

5. *Public Internet access centres need to be commercial, mostly small scale and led by entrepreneurs in order to ensure sustainability and proliferation. They should emerge naturally as a result of entrepreneurial activity, and follow the cybercafé model rather than the donor-led MCT model.*

   Developing countries simply do not have sufficient resources to support a large number of MCTs on an ongoing basis. To date, very few telecentre projects have been set-up on a commercial basis. For example, South Africa's telecentres are sponsored by community based civil organizations and NGOs, with very little evident commercial or even basic

management awareness. Colombia's COMPARTEL is the first Universal Service Fund to successfully implement a competitive bidding scheme for private operators, allowing economies of scale by bidding telecentres in the hundreds. This will facilitate telecentres to be run by local entrepreneurs in the community but with the support of a network and management organization[12].

Peru's FITEL Program learned a great deal from funding 500 "telecentros" which had just one or two PCs in a public access point in district centres. The next phase of this program will include much more local training and sensitization among the populace on the potential of the Internet, and will stress commercial viability or, at the very least, sustainability.

Taking the balance of experience thus far, it is clear that policy-makers can support Internet and ICT based service development in a variety of ways, but need to take a step-by-step approach that focuses a) more on the supporting environment than on direct finance, and b) looking at extending Internet service sequentially to the "next step" down in local government (i.e. to the next level of administrative centre, where most demand is likely to exist from government and non-government institutions and from private sector users) rather than to the whole population.

1.5 FUND MANAGEMENT & SUBSIDY DISTRIBUTION

Given the importance of transparency in the management and decision-making processes of the Fund and the need to secure the support of the contributors to the Fund, the issue of management control, day-to-day management, financial independence from Government, and tendering procedures are important. As a final component of this international review, some insights from other countries with Universal Service Funds are presented here.

1.5.1 Management of the USF

In the majority of countries, the USF is managed either directly under the regulator (e.g. as in Peru) or, in some cases, with the assistance of an advisory or management board specially created to represent the interests of rural stakeholders, the telecommunications industry and the communications regulator. Where the regulator is especially respected as being independent, it could be sufficient for the Fund to be managed directly by the regulator. In some recent cases (e.g. Uganda, Mongolia, Nigeria), the Government or Regulator has opted to appoint a management or advisory board or committee, with representation from a cross-section of society that extends beyond government. The following selection is provided as an example of potential non-Government members for such a board or committee:

- The ICT sector (not directly involved in management of an operator);
- A consumer protection agency;

12 A similar competitively bid project in Bolivia has not proceeded to implementation after the bidding process.

- Non-Government financial sector / NGO or community development organisation;
- The legal sector; and
- The finanical sector.

While the above represents a model being implemented by both Uganda and Mongolia, some Funds have clearly been managed with less representation. It is necessary for the Government to consider the issues that have arisen with the establishment of the Fund – e.g. operator unwillingness to contribute, lack of trust in the process, less-than-enthusiastic endorsement by civil society – and to create a management structure that satisfies its needs.

1.5.2 Importance of independent USF financial accounts

The case studies demonstrate the importance of ensuring that all monies collected as part of the Fund are kept in separate accounts from the regulator's general revenue and are used exclusively for the provision of Fund subsidies. Almost all recent Fund legislation and regulation internationally seems to recognise this and establish, in the regulation, the requirement that the Fund account shall be separate from Government, or any Government controlled agency, even from the regulator.

By contrast, in Guatemala, a 2002 reform to the 1995 Telecommunications Act gave the executive branch discretionary power to transfer funds out of the country's FONDETEL account into a general fund to finance other government projects. The result was that by the end of 2002, FONDETEL was left with only US$ 1 million of a potential maximum of US$ 32.3 million. Consequently, the credibility of the entire Universal Service program was severely damaged in the eyes of private sector firms and community organizations.

In order to increase the degree of separation of the Fund accounts from Government or even from the regulator, some countries appoint an independent financial manager to collect, hold, invest and/or distribute the funds. The actual role and responsibilities of the external Financial Manager vary from country to country. However, three countries that have used or plan to use an external financial manager are Peru, Nigeria and Mongolia.

1.6 EMERGING STRATEGY FOR VOICE & INTERNET – UGANDA CASE STUDY

1.6.1 Introduction

To illustrate the principles presented above in Sections 1.4 and 1.5, describing trends and strategic developments in African countries and elsewhere, a brief summary of the Uganda experience is presented here. This provides an example of the bringing together of voice and Internet / ICT service provision, using common infrastructure and the most economic solution, though with the participation of different suppliers in the Fund competition.

In Uganda's case, subsidies are being offered for the provision of universal access telephony in 154 rural areas not served by the major operators. Separate and smaller subsidies are being

offered for the installation of Internet Points of Presence (POPs) and high speed wireless access systems at all district centres. The Internet POPs will ensure that all institutions, schools and businesses within line-of-sight of the district centre's central radio tower will be able to secure high quality Internet access at the same price as if they were located in the capital, Kampala.
By deploying the voice and Internet facilities in this two-pronged manner, the strategy ensures 1) that universal access to voice telephony is brought as quickly as possible to the rural service zones by the most economic means; and 2) that those rural areas with higher concentrations of people and potential users (e.g. the district centres) will have the technological capacity to support public and private Internet and other online services, thus promoting the development of private sector access and the greater effectiveness of the "intermediary" institutions located at or around the district centres.

1.6.2 Background

Uganda's Rural Communications Development Fund (RCDF) is funded through a 1% levy on operators' gross annual revenue, supplemented by a seed contribution from the World Bank. As a key step towards establishing the RCDF's strategy, the Uganda Communications Commission (UCC) secured, though a provision in the licence of the two main operators, UTL and MTN Uganda, a declaration of which rural sub-counties would not be served by them within a stipulated period (by July 2002).

Of the country's 920 sub-counties, a total of 154 were thus declared and became "unprotected" from the operators' exclusive right to provide services until 2005. These 154 sub-counties became the focus of the telephony target for the RCDF.

The RCDF's integrated strategy included funding the following telephony and ICT targets in the first five years of operation:

- Universal access telephony in all 154 sub-counties not served by the major operators (at least one public access phone per 5,000 population, in addition to meeting private demand);
- Special equipment that would extend the reach/coverage of existing telecommunications networks into rural and remote areas;
- Internet points of presence and high speed wireless access systems at district centres;
- A national Internet exchange point (IXP) to facilitate inter-ISP traffic;
- 'Vanguard' Internet access projects for schools, NGOs, health clinics and other intermediaries at the district level; and
- Pilot content creation projects in telephony and Internet areas.

In addition to 1) its main universal access tender competitions and 2) its competitive application process for the Internet user grants, the RCDF envisaged providing small grants or micro-loans to enable entrepreneurs wishing to set up public payphones in areas with weak wireless signals, or with no power source, to acquire special "rural packages". The packages would provide an

enhanced performance desk terminal, power source and/or an antenna to improve call quality. In fact, as explained elsewhere, these packages are now being financed externally through micro-finance agencies who are recruiting village phone operators to provide public access on one of the GSM networks

The preparation for the Ugandan Fund also included a detailed "Rural ICT Baseline Study" in which the user needs, preferences and demand for all communications services were researched at the community and household level in every region of the country. This determined the level of demand; the level of payphone and other ICT placement justified in the Universal Access strategy; the process by which the markets will develop; and the identification of areas in which the Fund will need to focus. This data has already been made available to existing operators, as stakeholders in the development of the country, and was also available to new bidders in the bidding process. Making the data available to bidders reduces the risk of underbidding due to lack of information on potential revenues.

1.6.3 Leveraging the telecommunications backbone for Internet

When the RCDF program was designed, a broad strategy covering both rural telephony and the Internet was established. Regarding the Internet, it was realised that the country has digital backbones being constructed by the incumbent telecommunications operator, Uganda Telecom Limited (UTL) and the second national operator, MTN Uganda. The networks were planned to link virtually every regional centre (district headquarters' town) into a national backbone. Even though the incumbent's wired network was not extensive outside of the district centres, and the most prevalent service being deployed by the second operator was GSM, it was realised that every base station tower is a potential hub for a broadband wireless system. Already, in a few leading towns, Internet access was being provided by major ISPs in conjunction with the two largest telecom operators.

A techno-economic analysis determined also that the use of commonly available high speed wireless, with a coverage radius of 10-15 km, would ensure that the Internet service could be provided as a separate network, but one which transmitted its signal from the voice service base station towers in a very economical manner.

UCC decided that the provision of financial support from the RCDF to deploy a minimal level Internet POP – including local dial access and a broadband wireless hub – in every district centre, would be the logical 'next step' of national Internet development. This would enable any schools, intermediary agencies, local government and businesses that wished to become Internet users to receive access, either through low cost local dialling or by purchasing a high speed wireless terminal. It was thus decided to facilitate, first and foremost, the Internet POPs through competitive subsidy auction, rather than to focus on a multiplicity of telecentres and other user projects. With the latter, unless Internet POPs are already available, each project would require its own special Internet access plan; this would not necessarily contribute to the promotion of private sector access or the Internet market generally.

However, UCC also decided that *along with* or *following immediately behind* each Internet POP, one public Internet café per district and at least one "vanguard institution" (e.g. a leading Internet-ready school or college) could be supported, as well as training and regional content development. These would combine to promote the start-up of the local Internet market on a commercially sustainable basis.

In 2003, there was an existing commercial public Internet POP in just 5 of the country's 56 district centres. The RCDF thus commenced its development program with a competitive "lowest subsidy" tender for implementation of 20 Internet POPs. This competition was won by a single provider, the incumbent UTL. A few internet cafés willing to provide Internet training were also given subsidy awards through a competitive tender process. In 2004, the RCDF commenced a further competition to subsidise the provision of the remaining 31 district centre POPs and will also offer subsidies to "vanguard institutions" in seven districts.

1.6.4 Designing the subsidies

The technical assistance for the tender design process, which is being financed by the World Bank, has included estimation of the level of demand to be expected for services and the expected revenues, capital and operating costs. In the case of the telephony competition, estimates were provided for the total expected private demand; the public access demand; the full revenues; and all capital and operating costs. The "maximum allowed subsidy" is a calculated amount that fills the gap between the potential loss for the operator over a 10 year cash flow period and the amount that would be needed to achieve a normal commercial rate of return, using reasonably conservative assumptions, and after consideration of the project's sensitivity to several alternative scenarios. It is assumed that under competitive tender conditions, at least one operator will make more aggressive assumptions and thus win the contract at a slightly lower subsidy than estimated by the consultant.

For the Internet POPs, the demand for dial-up and dedicated wireless services at each district centre were projected. The maximum size of subsidy that each Internet POP will require to attract an ISP to provide service has also been estimated in similar fashion. The subsidy has been projected on the basis of a five year cash flow analysis and assumes a relatively conservative build up of demand but allows for a normal commercial rate of return by the service provider. The subsidies will be offered on a "one-time" contract basis in which the recipient (an ISP) will receive a fixed amount over a one or two year period to set up and offer Internet services at the district headquarters town. Dial-up users within the town, or potential wireless users in the vicinity, within line-of-sight of the central radio tower, will be able to secure service at the prevailing market rates available in Kampala.

The expected maximum allowable subsidies ranged from as low as $11,000 in the most attractive districts to more than $60,000 in the most remote or sluggish markets. The total maximum allowable subsidy for all 32 District POPs was estimated to be US$ 1.61 million (Average approximately US$ 50,000 per POP), though it was expected that due to the amount of

competition in the ISP market the actual bids would come in significantly lower than this. The tenders closed in mid January 2005 and five ISPs submitted offers. The lowest bid, containing offers for all 32 POPs was at US$ 1.06 million (average US$ 33,000 per POP) and the highest was at $1.45 million (US$ 45,000 per POP). It thus appears that the required RCDF subsidy will be, as expected, significantly less than the amount set as the maximum allowable and is very close to the Fund's cost projection that was made by the consultant.

1.6.5 Internet outcomes

An important feature of Uganda's Internet strategy is that by mid 2005, businesses and institutions throughout the country, at least those within the district headquarters' fixed network or within line-of-sight of the central radio tower, will be able to access the Internet. Recent studies have shown that some of the first users will be small Internet cafés that emerge and offer public access. Most of these will not need subsidies, and for that reason the RCDF's initial plans to subsidise community internet cafés was curtailed in order to avoid unduly favouring some players over others or to distort the development of the commercial market. Whereas RCDF's early strategy will not yet guarantee Internet service to the most remote corners of the country, the distance to Internet access will be greatly reduced by the placement of the POPs in each district headquarters. Many rural users will be able to access the Internet either directly or through public Internet cafés or institutions that are close to them. They will also benefit from the network access extended to "intermediary institutions" that serve their interests.

1.6.6 Key supporting features and outcomes to date

Two pillars of Uganda's planned rural communications development strategy are tariff flexibility, whereby the voice public service operators will be permitted to charge up to 50% more for airtime in the rural areas than in Kampala, and "special rural interconnect", a policy to implement asymmetrical termination charges. The asymmetric regime means that operators serving the designated high-cost rural areas will receive higher termination fees. This will incentivise them to develop the incoming call market, especially given that over 80% of rural Ugandans have relatives living in Kampala or overseas. This creates a far heavier demand for calls into rather than out of rural areas. UCC plans to use this to encourage operators to offer special incentives for payphone retailers to promote call termination.

In Uganda's RCDF auction, the licenses will be offered in three regional blocks (East and Northeast; Central and central-North; and West and Northwest). The regional blocks incorporate some reasonably attractive as well as some "worst case" areas, in order to ensure that all areas will be covered by the winning bidders. Operators have been given the option of bidding for any number of the three areas.

After the pre-qualification process, the qualified bidders for the voice services are the three established operators: UTL, MTN and Celtel. The competition was offering new entrants the opportunity to enter the market to serve the rural areas ahead of the termination of the exclusivity period of the two main operators, UTL and MTN. However, the passage of time – we are now

almost at the end of the exclusivity period in December 2005 – has diminished the attractiveness of the tender to potential new entrants. It is expected that the bidders will most likely offer standard and extended range GSM wireless solutions and that the competitive nature of the tenders between the three existing operators should still reduce the required subsidy from the US$ 8 million on offer to something considerably less.