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DCD/DAC/POVNET(2004)13



Organisation de Coopération et de Développement Economiques
Organisation for Economic Co-operation and Development

22-Oct-2004

English text only

DEVELOPMENT CO-OPERATION DIRECTORATE
DEVELOPMENT ASSISTANCE COMMITTEE

DCD/DAC/POVNET(2004)13
Unclassified

DAC Network on Poverty Reduction

LEVERAGING TELECOMMUNICATIONS POLICIES FOR PRO-POOR GROWTH

UNIVERSAL ACCESS FUNDS WITH MINIMUM-SUBSIDY AUCTIONS

Berlin 27-29 October 2004

This document is submitted for INFORMATION to the POVNET Infrastructure for Poverty Reduction (InfraPoor) Task Team workshop to be held on 27-29 October 2004 in Berlin, Germany.

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JT00172382

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Acknowledgements

Special thanks to Ichiro Tambo, to Susana Garcia-Lorenzo and to Christian de Perthuis who provided direction for this report, and also to Dimitri Ypsilanti, Sam Paltridge and Dr. FF Tsubira who provided information and feedback.

EXECUTIVE SUMMARY

Purpose and scope of document

1. The **objective of the present document** is to help donors assess the opportunity and risks of involvement in Universal Access policy/ Universal Access funds to extend telecommunications services to the rural poor.

2. In November 2003, the OECD Development Assistance Committee (DAC) Network on Poverty Reduction (POVNET) established a task team to develop recommendations to strengthen the poverty reduction impact of economic infrastructure projects. This report aims to contribute to POVNET's upcoming workshop¹, which will discuss specific technical and strategic issues of sustainable, pro-poor and pro-growth infrastructure provision, including:

- (a) Cross-cutting topics such as infrastructure finance, rural and urban infrastructure needs and gender dimensions for infrastructure and pro-poor growth;
- (b) Issues such as service delivery with private sector participation, decentralisation and governance and;
- (c) An overview on criteria and measures to make infrastructure projects pro-poor and pro-growth.

3. POVNET has focussed its poverty reduction efforts on three main areas: infrastructure, private sector development, and agriculture. Rural telecommunications services with private sector participation, made possible through Universal Access policies, are increasingly a cross-cutting topic for the three aforementioned priority areas; and indeed, a cross-cutting "hot topic" for pro-poor growth, as evidenced by the results of several country case studies and economic research:

- Rural telecommunications are a direct component of *pro-poor infrastructure*;
- Rural telecommunications are both enabled by, and, in turn, a key enabler of, *private sector development*, and;
- More indirectly, rural telecommunications also have a potential to impact *agriculture* (for example, through increased revenues and diversification of agricultural production, made possible by delivering SMS-based price and crop information²).

4. This report discusses ways of extending telecommunication infrastructure services to the rural poor in developing countries, by means of:

- Policy measures that contribute to creating an enabling environment for development of **market-based** telecommunications
- Complementary **subsidies** from Universal Access Funds allocated through minimum-subsidy auctions

¹ 27-29 (AM) October, Berlin

² One such project was conducted in Uganda by the Canadian International Development Research Centre (IDRC)

Results

5. Telecommunication infrastructure is an important element of **pro-growth** infrastructure development, and the prerequisite to wider benefits associated with information and communication technologies (ICTs). However, telecommunication connectivity in the **rural areas** of many developing countries is sorely lacking, and represents a bottleneck to development. It is therefore important to consider which policies and processes offer potential to extend telecommunications infrastructure services to the rural poor, as a component of growth that is both **pro-poor** and **sustainable**.

6. It is important to bear in mind that there are strong synergies and complementarities between telecommunication infrastructure and other infrastructure, especially electricity and transportation, both in terms of investments (economies of scale) and in terms of impact on poverty (lack of telecommunications reduces the impact of other new and existing infrastructure).

7. **Competitive** telecommunication environments spur technological and service innovations, lower prices, expand networks, and increase quality of services. Enabled by adequate **regulatory safeguards** and regulatory capacity, competition is a necessary condition to improve overall access to telecommunications and to enable the development of the ICT sector. The OECD's experience of nearly two decades provides insight into the process and impact of telecommunication reform, many lessons of which are fairly universal. Experience in developing countries has also shown that competition and regulation, particularly in mobile services, **triggers core network build-out by the private sector, connecting urban centres**.

- Regulatory reform and the creation of a credible independent regulator are the first steps to competition. However, necessary regulatory capacity building can be lengthy and,
- Government's support of the telecommunications industry is vital.

8. In complement to competitive telecom sector environments, targeted pro-poor policies, known as "**Universal Access**"³ (**UA**) **policies**, aim to strengthen the pro-poor growth impact of telecommunications, by extending telecommunication services to the un-served, mainly rural and poor, populations, through either private or public access facilities. Universal Access can be defined as access (individual or shared) to basic telephone service (and sometimes Internet) for every population centre above a certain population size, within a certain walking distance, or within a specific distance:

- **UA policy** specifies coverage UA goals in function of existing infrastructure and market/demand structure, as well as the means to achieve these goals.
- **UA goals** differ from country to country and require regular policy adjustments as markets evolve.

9. The **challenge** of UA policies lies in extending universal access to high cost rural areas, while minimising distortion of competitive, mainly urban, telecommunication market environments. This essentially implies putting in place policies, regulations and mechanisms that leverage public policy and investment to trigger private investment. The challenge is thus to balance competing objectives of:

- **Expanding access** to telecommunications services in rural areas, so as to maximise pro-poor benefits
- **Minimising subsidies**, i.e. cost to the telecommunications industry or to government budgets
- Ensuring service **operators'** profitability and **sustainability**

³ Or "Universal Service" which generally means private access as opposed to shared access and is more relevant to developed countries.

10. Several regulatory and policy measures can help developing countries to expand universal access through the market, **before using subsidies**. Cost-effective ways of providing incentives to markets to expand telecommunication infrastructure to poor areas include:

- Liberalising the resale of telecommunications services
- Setting-up preferential licensing schemes for rural providers
- Allowing operators flexibility in pricing
- Differentiating interconnection fees (i.e. the more profitable *urban* network operators pay more to connect to the *rural* network operators than vice versa)

11. In addition, **Universal Access funds**⁴ (UAF) for telecommunications are being created in many countries, to **subsidise** Universal Access. In many cases, UAFs are financed through a levy on the telecommunications sector, and administered by the telecommunication regulatory agency. Indeed, sixty countries have or are planning to set up a Universal Access fund⁵.

12. To distribute “smart subsidies” from these Universal Access funds to operators, **minimum-subsidy auctions** are emerging as a good practice model that is increasingly used (see alternative/complementary mechanisms in Annex 1).

13. **Lessons learned** from results in five **Latin American countries**⁶ that used minimum-subsidy auctions to allocate Universal Access funds, drawing on the results presented by Dymond and Oestmann, 2002, include:

- Universal Access targets set by governments were, overall, met or exceeded: public subsidies demanded were considerably lower than the maximum amounts offered, and small public subsidies triggered sizeable private investments;
- Bundling attractive with less-attractive service areas, and offering larger license areas for economies of scale, helps ensure that all areas receive bids and that operators are sustainable;
- Enabling applicants to bid simultaneously on several projects (combining bids for multiple licenses) can create additional economies of scale and help minimise subsidies;
- Allowing bid winners to offer additional services⁷ to different customer segments⁸ can increase their profitability and lead them to invest more;
- The experience of the operators bidding is essential. Demanding performance guarantees, or subjecting winning bids to rigorous due diligence, minimises the risk of operator non-sustainability, poor quality of service and under-bidding. Participation of senior financial partners can provide valuable experience and resources.
- Internet *policies* are needed before subsidies for Internet services, and subsidies should focus initially on supporting basic infrastructure necessary for Internet access (rather than on Internet

⁴ Or “Universal Service Funds”, or “Universal Service Obligation Fund”, or “Rural Telecommunications Development Funds”.

⁵ ITU, 2004

⁶ Chile, Peru, Guatemala, Columbia and the Dominican Republic.

⁷ for example, other services than basic public telephony, such as individual access lines and value-added services such as data.

⁸ for example, allowing operators to offer services to individuals and businesses.

services such as telecentres which have generally not been self-sustaining after their initial funding).

14. In Africa, Uganda is the very first country to conduct a country-wide minimum subsidy auction for UAF subsidies (currently, in 2004). The international community anxiously anticipates its outcome, since, if successful, it could accelerate widespread replication of similar projects in Sub-Saharan Africa. The process of setting-up minimum-subsidy auctions for UAF subsidies in **Uganda** is very interesting in that it is the first in Africa, that it has followed current best practice knowledge, that Uganda's telecommunications sector is extremely dynamic, and because the donor community has been active in helping the Uganda Communications Commission to set-up its Universal Access fund and policy. Key steps in the process of the minimum-subsidy auction currently being conducted in Uganda have been:

- Step 1: Governments/regulators set UA policy and mechanisms, with clear goals, through analysis of existing situation, stakeholders' plans, and analysis of baseline demand. UA policy in Uganda included both roll-out obligations on the national operators and a UA fund.
- Step 2: The regulator designated areas and services where it estimated the social and political value of access to telecommunications to be high and for which it was viable in the long-term to provide service commercially, but where operators were unlikely to invest in the short-term. It also specified the number of locations for telecommunications services.
- Step 3: The regulator estimated a maximum level of subsidy, which is the difference between additional cost incurred (making technology assumptions, although operators are then free to choose appropriate technology) and the anticipated demand. Since subsidies are explicit/transparent, it is easier for both governments and operators to determine whether the benefits justify the costs. Less attractive areas were bundled with more attractive areas, to ensure that the resulting "package" would receive bids.
- Step 4: The private operators who will bid for the minimum subsidy from the Universal Access Fund will be provided selected to provide service.

15. Universal Access policies, such as that of Uganda, have leveraged donors and external contractors' experience to increase quality of analysis accompanying the set-up of Universal Access Funds (including helping determine the areas to be subsidized, the service level agreements, and the bidding process). Seed funding of the Universal Access Fund by donors has also been crucial to launch UA, although in Uganda it has arguably caused considerable delays in implementation. Finally, donor-financed pilots have helped developing countries build experience and capacity in managing minimum-subsidy auctions.

INTRODUCTION

16. This paper discusses the topic of Universal Access -- specifically Universal Access to telecommunications in rural areas of developing countries -- from the policy perspectives of telecommunication policy reform and of complementary Universal Access public subsidy mechanisms. Starting with broad lessons learned on competition in telecommunications, the report will narrow in onto the specific mechanism of minimum-subsidy auctions for Universal Access to telecommunications.

17. First of all, how does **competition** in telecommunications affect Universal Access/Service? What roles does competition play on technological innovations such as Internet or mobile? And what regulatory safeguards have been or are necessary to enable competition and to promote Universal Access/Service?

18. We will first analyse the experiences of OECD countries that started reforming their telecommunication markets early on, to gather insight into the process and impact of telecommunication reform. We will also review complementary mechanisms that OECD countries have set up to subsidise Universal Access in the areas unlikely to be covered by market forces alone.

19. We will then review some regulatory measures that can help to provide Universal Access to the rural areas of developing countries without subsidies, and we will discuss some cost-effective ways for developing countries to provide incentives to markets to expand telecommunication infrastructure to poor rural areas, before making use of subsidies.

20. In a second section, we will first explore the emerging good practice of minimum-subsidy auctions for allocation of Universal Access funds for those areas which are truly non-viable in the short-term. Indeed, the challenge of UA policies consist of extending universal access to high cost rural areas, while minimising distortion of competitive, mainly urban, telecommunication market environments. This essentially implies putting in place policies, regulations and mechanisms that leverage public investment to maximise usage of the markets by ensuring operator profitability, and minimising levels of subsidies. In this light, we will explore minimum-subsidy auctions for allocation of Universal Access funds, by assessing the results and main lessons learned from auctions that have been implemented in Latin America.

21. We will then review the process that an African country, Uganda, has followed to plan its own minimum-subsidy auctions by drawing on best practices accumulated in other countries and integrating elements specific to its country-context.

TELECOM SECTOR REFORM AND UNIVERSAL ACCESS

Lessons From OECD Experience

22. Competition in telecommunications was initiated in mature telecommunications markets of OECD countries, starting in the mid 1980s. During the 1990s, significant telecommunications liberalisation was achieved in the OECD countries. While at the beginning of the decade, most telecommunications services in OECD countries were provided on a monopoly basis, by the end of the 1990s, over 96% of the OECD market, measured by total telecommunications revenues, was open to competition⁹.

23. Collectively, OECD countries have built up considerable experience and know-how in appropriate regulatory mechanisms, tools and principles to ensure dynamic telecommunication markets, in particular an effective framework for interconnection¹⁰ and equal access¹¹. They have also experimented with various mechanisms to subsidise service provision for the mainly rural and/or poor populations, to achieve Universal Access/Service objectives.

24. Exploring the experience of OECD countries' telecom liberalisation is interesting because its consequences reach far beyond OECD country borders. Today, almost all countries have, to some degrees, begun to shift toward more competitive, more private and more international telecommunications industries¹². Though at different paces, all regions are shifting away from the monopolistic, public, and domestic patterns of the past.

25. This section will explore some **main lessons learned** from the OECD countries' experience in successfully reforming telecommunications markets while maintaining Universal Access/Service objectives.

Competition and Universal Access/Service

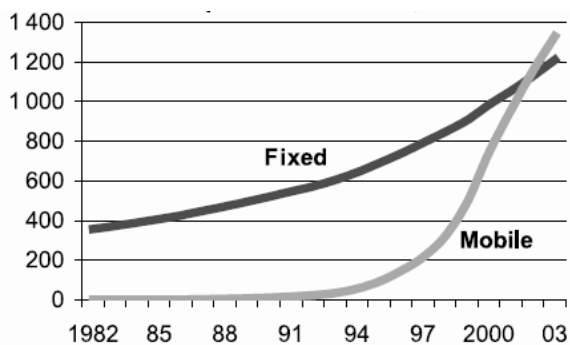
26. A major argument initially used by large incumbents (with fixed-line investments) to delay liberalisation was, paradoxically, that Universal Service could not be provided in competitive markets. Subsequently, **competition**, including mobile competition, went a long way in providing Universal Service. It speeded market development and network expansion, as incumbents facing new entrants in high revenue activities reacted rapidly to expand their customer base and ensure they maintained a competitive advantage over new entrants. Price reductions due to competition were also major determinants of increased Universal Service. Finally, competition helped to avoid subsidising fungible customers, by identifying the bottlenecks and the areas truly in need of subsidies for access.

⁹ World Bank, Regulatory Handbooks.

¹⁰ Standards, rules and tariffs relative to physically connecting two telephone networks.

¹¹ OECD ICCP, 1997, p64. However, at the national level many countries still need to develop appropriate national administrative experience in regulation.

¹² Wilson, 2003.

Figure 1: World telephone subscribers, millions

Source: ITU, 2004

Technological innovation

27. A related key point is the role of competition in the diffusion of new technological advances. It is important to note that key technological innovations (cellular, the Internet, or wireless broadband for example) have by and large occurred in market economies¹³, and services were generally rolled out in response to emerging demand. **Competition spurred innovations** in applications and technologies, (including the Internet and mobile), in equipment, in service range, and in pricing mechanisms (including the use of pre-paid).

28. These innovations gave operators access to very low-cost, sophisticated, and high quality solutions to expand their networks, such as fixed wireless solutions which can be used to extend networks if policy permits. For **users**, innovations meant an upsurge in service offering, affordability and accessibility.

29. Thus, technological innovations, spurred and enabled by markets, have greatly contributed to increasing universal access.

Policy, regulation, and Universal Access/Service

Universal Service/Access means different things to different countries

30. Overall, OECD countries have utilised competitive markets to identify the areas truly in need of subsidies. Liberalised environments, in which *several* actors can *fund* and sometimes *implement* universal service obligations, have driven policy-makers to **define** Universal Service objectives more clearly and to monitor Universal Service obligations more closely (see Annex 3).

31. With the evolution of the telecommunications environment, **policy re-adjustments** have been conducted. Subsidies for universal telephony service are no longer as relevant in OECD countries. However, Universal Service has been expanded to cover services other than voice, such as free emergency calls. Most recently, in relation to the issue of including broadband Internet in Universal Service

¹³ Although the Internet was first developed publicly, its major developments were arguably in response to market demand. In fact, many of the newest innovations are the results of the demand for high speed Internet.

obligations, the OECD has proposed systematic criteria to analyse government support/subsidy policies for broadband services¹⁴ (see Annex 4).

32. In general, Universal Service obligations have required that public telecommunication operators provide basic telephone service to all who request it at a *uniform* and *affordable* price in spite of different costs of supply, and has also implied obtaining the service at similar *quality* levels. Most OECD countries have implemented *geographic tariff averaging*, i.e. fixed tariffs throughout the country (excepting areas in the USA and Canada).

33. In the United States, Universal Service, which initially involved only basic voice, has gradually been expanded to include other services such as long-distance service, directory assistance, and emergency services. Canada promises to make telecommunications service “accessible to Canadians in both urban and rural areas in all the regions of Canada” (Canadian Telecommunications Act, 1993, Article 7(b)), while Mexico mandates that the telecommunications provider “offer basic telephone service in all towns with more than 500 inhabitants” (Telmex License). The European Union requires that “Member states shall, where appropriate, take specific measures to ensure equal access to and affordability of fixed public telephone services, including directory assistance for disabled users and users with special social needs” (European Commission, 1997, Art. 8)¹⁵.

Regulating Universal Service

34. In some OECD countries, necessary **regulatory capacity** building, to enable competition while protecting public interests, required relatively long transition phases. Progressive liberalisation enables incumbent to become more competitive. In addition, many governments preferred that tariff (price) adjustment be gradual (price rebalancing towards costs as a consequence of competition, i.e. higher local prices for line rentals and connection fees, and lower long distance and international prices) and thus regulated rate rebalancing by applying specific price caps on line rentals and connection fees.

Heterogeneous solutions implemented

35. Governments have created **sector-specific independent regulators** to enable fair competition, but also to maintain Universal Service, which remained an important policy objective for all OECD countries in the changed model for telecommunications markets¹⁶. Regulatory safeguards implemented by regulators relate to **tariffs** (as mentioned previously), **quality of service**, **licensing conditions**, **interconnection** between operators, and **subsidies**. Very heterogeneous solutions aiming to preserve/expand Universal Service were implemented (see Annex 2).

36. Regarding the individual national experiences with providing Universal Service in OECD countries, universal service obligations have historically been intertwined with the liberalisation process occurring within each country. The length of the process has varied widely.

37. The mechanisms that countries have opted for with respect to universal service obligations reflected the general national attitude towards the importance of competition in the telecommunications industry, the maturity of the network, the existence of alternative infrastructures (such as cable), as well as the information available on the cost of universal service.

¹⁴ OECD (2003), Universal Service Obligations And Broadband, Working Party on Telecommunication and Information Services Policies.

¹⁵ Jayakar and Sawhney.

¹⁶ OECD CICCIP, 1997, p 67.

38. **Incumbents** have often been assigned the role of “carrier of last resort”, either at their cost (U.K., Sweden, Finland, and Japan) or with compensation determined by regulators (France)¹⁷. Asymmetrical interconnection charges, whereby incumbents charge higher rates for new entrants to connect to their network, have often been used to fund obligations (e.g. in Canada, France, and New Zealand). However, this way of funding Universal Service obligations, which can be assimilated to implicit subsidies, is less and less practicable as it constitutes a barrier to entry and can run counter to the objective of promoting competition.

39. **Obligations on new entrants** were also imposed through conditions of their licenses, in order to cross-subsidise high cost areas.

40. Several OECD countries implemented **explicit subsidies** for high cost (rural) areas, such as Universal Access/Service funds. Although funding universal service through direct governmental budget support has the least price-distortion effects, in practice, it is politically easier to impose the funding on fixed voice telephony service providers (Denmark), on designated carriers (Japan), on the incumbent (Norway), or on users (USA). In Europe, France and Italy have set up a Universal Service fund.

41. Calculating the net **cost of Universal Service** to the carrier(s) providing the service is complicated and involves fairly sophisticated calculations, for which regulators usually find very different results than do incumbent operators (Telecom Italia, for example, has claimed 30% of its network as non profitable)¹⁸.

42. Increasingly, auctions are viewed as a potentially efficient way of allocating subsidies from Universal Access/Service funds. The idea of distributing these subsidies competitively was first introduced in 1994 in Chile and then in other developing countries. This mechanism for allocating subsidies may be an efficient one for telecommunication sectors in Europe.

The role of governments

43. There are political issues involved in Universal Access. Ministries of Finance often wish to maximise returns from privatisation by granting exclusivity and market advantages to operators. On the other hand, Ministries of Communications and regulators are more focussed on promoting competition and setting investment obligations on operators before privatising, so as to increase service. Regarding the sequencing of reforms, setting obligations on operators, including Universal Service roll-out obligations, should be done upfront i.e. **regulation should precede privatisation**¹⁹. Mexico is an example of a country which privatised its incumbent first, under pressure from the Ministry of Finance, and then tried to regulate by setting investment requirements on the privatised entity (connecting every town of over 5000 inhabitants). If that is not the case, privatisation licenses should be very detailed with regards with regards to coverage obligations.

Telecommunications Policies In Developing Countries

44. Competitive, private-led markets have shown they can go a long way towards making telecommunications services available throughout the population. This section outlines some cost-effective measures that help achieve widespread access to telecommunications services in developing countries by removing obstacles to the proper operation of markets.

¹⁷ OECD STI (2004); Regulatory reform in the telecommunications sector in France, July.

¹⁸ Dimitri Ypsilanti, OECD STI, meeting July 22nd, 2004.

¹⁹ Dimitri Ypsilanti, OECD STI, meeting July 22nd, 2004.

45. The following findings were identified through a review of several countries' experience in expanding Universal Access²⁰, including Uganda, Chile, and Peru; documentation²¹; as well as through discussions with OECD experts on telecommunications policies.

Relevancy of OECD experience for developing countries

46. Telecommunications policy balances tend to be remarkably consistent around the world, in developing and developed countries alike²², between public and private initiatives, monopoly and competition, regulation and de-regulation, domestic and foreign ownership, and centralised and de-centralised administrative controls. Though at different paces, all regions are shifting away from the public, domestic, monopolistic and centralised patterns of the past.

47. However, it is important to note that OECD countries introduced competition when infrastructure was widely built by powerful monopoly incumbents that said they used cross-subsidies to lower prices of local communications at the expense of long distance and international communications. Thus, **Universal Service** policies have focussed in particular on the **affordability** of services.

48. In contrast, in developing countries, larger portions of the population often live in rural areas. For example on the African continent, 70 to 80% of the population lives in rural areas²³. Furthermore, unlike OECD, African countries do not have the same large dominant incumbents covering a large portion of the territory with large investments. Consequently, in developing countries, Universal Access policies aim to spur capital investments in infrastructure expansion in places that private operators will not serve due to insufficient economies of scale of collective demand. Thus, **Universal Access** policies in developing countries focus first on **availability** of service, generally through public access, as opposed to affordability for all private users.

Competition and regulatory reform to trigger core network build-out

49. Regulatory reform, to establish rules of the game in the telecommunications sector and enable competitive markets to build a core network, is the first step towards Universal Access, and requires in particular the creation of a **credible independent regulator** (who usually becomes the administrator of the Universal Access Fund). During the 1990s, more than 150 countries worldwide adopted new telecommunication legislative frameworks that opened some market segments to competition, allowed private participation²⁴, and established a regulatory agency. Over two thirds of African countries have now introduced independent regulatory agencies.

50. An independent regulatory agency is particularly important to set rules regarding **interconnection** between different operators' networks. Interconnection issues are a very frequent bottleneck to development of telecommunications, as incumbents generally resist or overcharge interconnection with new entrants.

²⁰ Uganda Communications Commission (UCC) (2004b), Uganda's Approach to Universal Access & Communications Development Funding - A Guidebook for Policy Makers and Regulators, UCC, IDRC, Government of Canada.

²¹ In particular International Telecommunications Union (ITU) (2003), "Trends in Telecommunication reform 2003 - Promoting Universal Access to ICT: Practical Tools for Regulators", Geneva, Switzerland.

²² Wilson, 2003

²³ Panos, 2004

²⁴ Although recent privatisation attempts have stalled due to unfavourable markets conditions, for example in Ethiopia, Kenya, Nigeria, or Malawi. ITU, 2004.

Box 1: WTO Basic Telecommunications Agreement, 1998

89 countries agreed multilaterally to regulate the basic telecommunication industry; resulting in the World Trade Organisation's (WTO) Basic Telecommunications Agreement (BTA), which deals both broadly and specifically with Universal Service:

1/ Gives countries the option of deregulating their domestic markets, while negotiating market access and non-discrimination internationally. Reliance on competition to meet technical and social demands is seen to play a role in increasing Universal Access/Service by promoting economic efficiency and technological achievement.

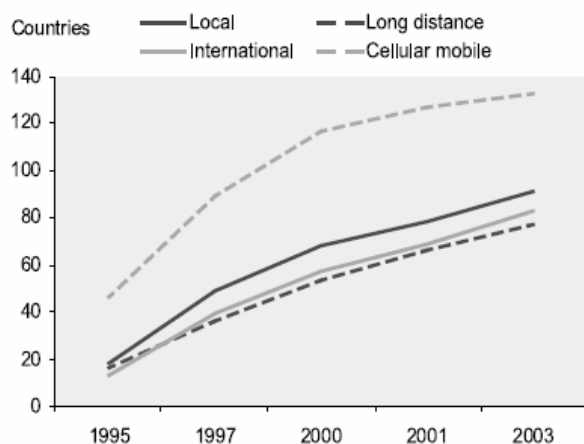
2/ Sets-out basic regulatory principles, to which countries are bound by international treaty, including licensing, interconnection, anti-competitive behaviour and transparency.

3/ deals specifically with universal service / universal access: each country defines its own objectives (but implementations of universal access and service policies must not violate either the Reference Paper or the WTO Agreement itself)

51. Enabling **competition and pricing flexibility** (such as with prepaid and higher prices for mobile), usually first in the **mobile sector**, enables tremendous mobile growth, advancing Universal Access objectives, especially in urban areas. It is also widely seen as a first step towards desirable competition for services using different technologies (satellite, fixed, fixed-wireless and IP). This competition enables the creation of a basic core network that connects urban centres throughout the country²⁵.

52. A majority of countries now allow competition in the mobile and Internet access markets. Mobile operators have extended services to areas and customers that were previously un-served, including many semi-rural and rural areas. Often, especially in the case of Africa, the provision of mobile service by an operator other than the incumbent has introduced competition into local service markets (bypassing remaining monopolies in fixed-line services such as local and long distance telephony), and mobiles have become a substitute for (fixed) basic telephony.

Figure 2: Growth of competition in selected service markets, mid 2003



Source: ITU, 2003.

²⁵ As was the case in Uganda, after the licensing of a second national operator, MTN.

Complementary pro-poor regulatory measures

53. **Complementary pro-poor regulatory measures** that help expand access to telecommunications include liberalising the **resale of telecommunications services** (which mainly impact access to telecommunications in **urban areas**). Countries, such as Nigeria, that have liberalised the resale of telecommunications by individuals without a license, have experienced an explosion of urban retail outlets offering telecommunication services, without the addition of any public resource. This has provided service extension, employment opportunities and income generation sources.

54. There are other market-oriented regulatory measures that help telecommunications development in **rural areas**. Allowing higher **tariffs** for service in rural areas for a limited time, to reflect the gap in cost between rural and urban, can improve operators' financial viability in rural areas²⁶. Many regulators insist on keeping tariffs low, especially in rural areas, since affordability is lower than in urban areas. But this can have a perverse effect: if operators cannot charge higher tariffs in the more costly rural areas, cost recovery is impossible and they consequently avoid serving rural areas. Although affordable service in rural areas is the ultimate objective of a Universal Access policy, it can be beneficial to temporarily allow operators to charge a specified amount above urban tariffs. Evidence that this works are the mobile operators in Africa. Mobile tariffs are less regulated than fixed tariffs, or not at all. Furthermore, rural populations often develop innovative ways of using the networks once service is there, for example through sharing phones, using call-back, or 'beeping' urban contacts who are willing to pay for the calls.

55. Differentiating **interconnection** fees (i.e. the *urban* network operators pay more to connect to the *rural* network operators than vice versa) is also a potential way to improve the profitability of rural operators (see main issues involved in Annex 13). As an example of this, the largest Chilean rural operator derives 60% of its total revenues from its positive interconnect balance with urban operators, allowing it to recover costs and develop the significant business opportunity from incoming calls. Colombia has also recently implemented a cost-based asymmetric interconnection regime for rural operators and Peru is planning to do so.

56. Setting-up preferential **licensing schemes** for rural service providers, as they face higher costs and lower revenues is another way to facilitate rural operator viability. An example could be exempting them from spectrum or licensing fees.

Government support of the telecommunications industry and Universal Access

57. Government awareness and support of telecommunications sector initiatives and Universal Access policy to connect rural areas are essential, in order to mobilise resources to define UA policy and objectives, in particular. Most developing countries in Africa have axed their poverty reduction strategies on rural development, as a majority of the poor live in rural areas and economies are very dependent on agriculture. For example, rural coverage statistics, defined in terms of the number of telephone main lines per 100 inhabitants, are often not disaggregated from overall national statistics, both reflecting and contributing to an overall lack of priority given to rural telecommunications. Rural telecommunications offer great potential for socio-economic development at low public cost, making them an interesting sector for policy-makers to focus on. Rural telecom has been a governmental priority in the cases for example of Chile, Peru, or Uganda. These governments have made strong commitments to development and

²⁶ International experience suggests that communities are willing to spend at least 2.5% of community income on telecommunication expenses.

modernisation (Uganda for example)²⁷ and key decision-makers have been influenced by exposure and participation to global “Information Society” initiatives as well as regional ICT initiatives.

58. Bottlenecks to investments by operators in developing countries often include the appropriation of international interconnection revenues²⁸ by governments, rather than re-investment in telecommunications, as well as the (well-publicised) non-payment of telecommunication bills by Ministries. In Gambia for example, a significant problem faced by the telecom operator is that the government did not pay its phone bills, especially the Ministry of Finance. If the operator does not get paid it faces a shortage of funds which it can invest.

The importance of basic parallel infrastructure

59. As seen, competition holds potential to trigger the build-out of core networks: in Uganda the most extensive network is private and based on mobile. There are strong synergies and complementarities between telecommunications infrastructure and other infrastructure, especially electricity and transportation infrastructure, both in terms of investments (economies of scale) and in terms of impact on poverty. International and regional backbones are important and require international co-operation. Finally, lack of telecommunications also reduces the impact of other new and existing infrastructure.

²⁷ Reflected for example in Vision 2025 and the Poverty Eradication Action Plan.

²⁸ known as “accounting charges”.

MINIMUM-SUBSIDY AUCTIONS TO ALLOCATE UNIVERSAL ACCESS FUNDS

60. Huge connectivity gaps between urban and rural areas remain, although the slow progress in rural areas is somewhat hidden²⁹.

61. The establishment of Universal Access Funds is now being considered in many countries, to provide financial incentives to the business sector in the deployment of communication networks to rural communities. Sixty countries worldwide have or are planning a Universal Access Fund³⁰. In two thirds of these countries, the fund is managed by the telecommunications regulation authority.

62. The model of using minimum-subsidy auctions to competitively allocate subsidies from the UAF has existed since Chile's *Fondo de Desarrollo de las Telecomunicaciones* introduced the concept in 1994. Since then, several developing countries have gained experience in constructing smart subsidy policies using Universal Service funds and competitive bidding for subsidies.

63. This section will review **results and lessons learned** from experiences with minimum-subsidy auctions to allocate Universal Access funds in five Latin American countries (Chile, Peru, Guatemala, Columbia and the Dominican Republic), drawing on the analysis of Chile³¹ and of other countries (results presented by Dymond and Oestmann, 2002, in particular).

64. Next, this section will detail the **process** of setting-up the minimum-subsidy auction in Uganda. The process in Uganda is interesting since it is the first such process in Africa, and because the donor community has been active in helping the Uganda Communications Commission to set-up its Universal Access fund and policy according to current best practice knowledge, especially that gleaned in Latin American countries. Uganda is currently (2004) conducting its first country-wide auction.

Latin American Results With Minimum-Subsidy Auctions

Universal Access funds

65. Universal Access Funds are more and more often **financed** through levies on a wide range of operators' telecommunications services (as opposed to only from specific "high margin services", like international long-distance).

66. To date, funds are generally **administered** by the telecommunication regulatory agencies (e.g. Peru, Chile). Sometimes, they are managed by special agencies, or directly by the government ministry

²⁹ For example, rural coverage statistics, defined in terms of the number of telephone main lines per 100 inhabitants, are often not disaggregated from overall national statistics, which reflects and contributes to the lack of priority given to rural telecommunications. Furthermore, a significant number of lines are used for commercial purposes. Household connection rate does not mean access to a public phone. And national statistics often do not indicate which portion of the population has access to a public phone booth.

³⁰ ITU, 2004.

³¹ Wellenius, 2001.

(e.g. Colombia). Usually, independent regulators and agencies are less likely to be influenced by government or political interest than governmental Ministries.

67. Older Universal Access funds targeted access to fixed-line telephone networks, with phone booths for example. In the recent fund programs, providing access to voice telephony through mobile networks is increasingly relevant. This is because mobile is often quicker to deploy and more cost-effective. Furthermore, many recent funds support programs to help develop other ICT services, especially Internet access services.

Minimum-subsidy auctions

68. Since the first fund was established in Chile in 1994, over 20,000 communities have received telephone service for the first time through UA fund mechanisms in Chile, Peru, Guatemala, Columbia and the Dominican Republic³².

69. The Latin American experience is analysed from three perspectives: (1) first, whether the fund programs achieved the Universal Access **targets** (in terms of rural inhabitants with access to telecommunication service); (2) second, whether the funds managed to catalyse commercially **sustainable** long-term service provision and (3) finally, what practices emerged to **minimise subsidy** amounts (See Annexes 6 and 7 for additional information on country results).

(1) Ensuring Universal Access to telecommunications

70. **Universal Access targets** set by governments have, overall, been **met or exceeded** in these five Latin American countries³³ through the use of minimum-subsidy auctions.

71. **Small public subsidies triggered significant private investments.** In Peru³⁴, each dollar of subsidy attracted two dollars of private investment. In Chile to date, USD 1 of public subsidy leveraged over USD 6 of private investment: indeed, as a result of public subsidy of about USD 21 million, the five firms that won auctions invested an additional USD 30 million in public access telephones, plus about USD 109 million in other services (including residential and commercial individual access lines and value-added services). For example, one Chilean operator that won licenses requiring it built 1,800 payphones went so far as to build a regional network of 18,000 lines, largely exceeding requirements. It is notable that this was made possible by regulation allowing the winner to also serve other business and residential customers, and propose unregulated services.

(2) Financial sustainability of operators

72. **Excessively low bidding** has been a concern in the Latin American auctions, and has often resulted in operators not having sustainable operations or adequate quality of service. For example, Peru's 1999 competition was won by a company that bid only 20% of the available subsidy and was then unable to meet its roll-out targets. Quality of service has also been a concern.

73. In most cases, rural license opportunities attracted **bidders without much operational experience**, no large international operators, and few incumbent operators. Experienced incumbent operators in Chile and the Dominican Republic won only a few bids. Dominant bidders in Peru, Colombia,

³² Diamond and Oestmann, 2002.

³³ Intelecon, 2002.

³⁴ North Borderline pilot project.

Guatemala and Chile, were relatively inexperienced and newly formed operators, usually associated with, or owned by, technology suppliers.

74. Several funds included projects to extend access to the **Internet and other advanced ICT services**. Colombia and Chile include Internet access and telecentre/ infocentre programs, while the Dominican Republic includes telemedicine projects in its portfolio. Telecentres have generally **not been self-sustaining** after the initial funding; showing that rural demand for Internet services is extremely embryonic.

(3) Minimising subsidy levels

75. On average, in those 5 countries, the amount of subsidy actually bid and granted has been less than half the maximum offered by the funds (i.e., the amount calculated by the regulators). However, this average hides a **wide range of experiences**, from zero subsidies in some of the first Chilean auctions to 100% of the maximum subsidy amount in later auctions.

76. **Combined bids for multiple licenses** have helped minimize subsidy levels, by enabling operators to benefit from economies of scale. Peru's first pilot project did not package zones so as to ensure attractiveness of entire area and minimise the level of subsidy. Its first complete bidding process in 1999 received independent bids for the three major areas (South, Centre South and Jungle North), but also allowed bidding for two areas (e.g. South *and* Centre South), or for the entire three areas. In fact, the winning operator, Telerep, made a **combined bid** for all three projects for USD 10.99 million (lower than the independent bids and other combined bids, and much below the maximum available subsidy of USD 50 million). In Chile, Peru, Colombia and Guatemala, dividing license territories into regions and areas and the opportunity to bid for multiple licenses allowed bidders to assemble territorial blocks according to corporate interests, and minimised the subsidies required (as applicants could benefit from economies of scale and scope).

Main lessons learned and solutions identified

77. **Careful license packaging** by the Fund administrator/regulator helps ensure the three objectives of expanding access to telecommunications in rural areas, minimising subsidies, and ensuring operator sustainability. Some remote sites in early bids (remote sites in Chile in particular) were much less viable than others, and some did not even attract bids. Subsequent minimum-subsidy auctions learned from this experience and mixed attractive with less-attractive service areas, offering larger license areas with larger potential for economies of scale.

78. The **experience of the operators bidding** is essential in order for them to be able to produce a realistic business plan and ensure quality of the services they deliver. An option to minimise risks of under-bidding and operator non-profitability is to demand higher performance guarantees, or subject winning bids to more rigorous due diligence. Means to achieve this could include:

- Participation of senior financial partners can provide more business planning rigor and due diligence, as well as additional resources.
- Rural operators indicated that they would appreciate equity participation, limited recourse debt and other support from major players³⁵.

³⁵ Dymond and Oestmann, 2003.

- Thus, the active participation of major financial players could help provide stability and long term viability.

79. **Allowing bid winners to also offer other services** to other customers can increase their profitability and lead them to invest more.

80. Enabling applicants to bid simultaneously on several projects helps minimise subsidies.

81. A step-by-step approach to Internet and advanced services has more potential to be sustainable:

- **Policies** are needed first, before subsidies; policies that will support market growth by removing obstacles (just like for telephony and allowing mobile, the same goes for Internet and allowing IP Telephony, nation-wide local call tariffs for Internet dial-up, easy licensing for ISPs, access to international bandwidth and national IXP exchanges).
- **Subsidies** disbursements should focus initially on supporting basic infrastructure necessary for Internet access i.e. Internet POPs (points-of-presence) and relevant applications and content. Only later could use similar minimum subsidy principles as for telephony funding be used, to help ensure sustainability for telecentre and advanced ICT service projects.

Uganda's Approach To Universal Access

82. Uganda has created an enabling environment, in which it leveraged market forces to build out a core network, aided by government implication, international donor involvement, and a participatory process. Uganda has gone in 7 years from a telephone penetration of 0.3% in 1996 to its current telephone penetration of 3,6%.

83. In the meantime, Uganda prepared a strategy based on current best practises to provide subsidy incentives to healthy private operators to reach out to the rural poor in areas unlikely to be served by the market. Uganda was able to leverage the experience of minimum-subsidy auctions implemented successfully in other countries, and has also implemented innovative features which reflect its specific country features.

84. One major difference between Uganda's situation and earlier experiences with minimum-subsidy auctions is that mobile technology is now available and could be used to address rural areas more cost-efficiently, thus at a lesser cost to government. Furthermore, mobile is already quite widespread in many urban centres throughout the country.

General country information on Uganda

Figure 3: Map of Uganda

Key index:

Population = 26.4 M (2003);
 Land area = 199,710 km²;
 Population density = 102 ha/ km²;
 Rural population (%) = 82%;
 GNI³⁶ per Capita (Atlas method, USD) = 250;
 GDP - real growth rate = 4.4%;
 Adult literacy rate = 69.9%;
 Median age = 14.8 years;
 Life expectancy = 46.0.

(Source: World Factbook, 2004; World Bank, 2003)



Source: the World Factbook

85. Uganda, a landlocked country in East Africa, is classified as a “Least Developed Country” by the UN, but has achieved solid economic growth for the past 15 years. Uganda is bordered by Kenya, Tanzania, Rwanda, the Democratic Republic of Congo and Sudan.

86. Over 80% of Uganda’s population is rural, and agriculture employs more than 80% of Uganda’s workforce. Average **population density** (102 habitants per sq. km)³⁷ is higher than the average low income country density (76 habitants per sq. km), and significantly higher than African density (27 habitants per sq. km).

87. The country is divided into **45 districts**, each of which has a major town or district centre, and on average **four counties, 16-20 sub-counties** and 90 parishes. The Ugandan government follows a decentralisation policy which places many administrative responsibilities at the sub-county level.

88. In terms of economic policy³⁸, the government has been following a hands-off approach since 1986. After coming to power in 1986, the government of President Yoweri Museveni put in place macroeconomic and social reforms to stabilise the country and to initiate development of the economy. Between 1990 and 2000, real GDP growth averaged nearly 7% per year. Uganda’s economy has performed well over a sustained period. This can be attributed in large part to continued investment in infrastructure rehabilitation, improved incentives for production and exports, reduced inflation, gradually improved domestic security, and the return of exiled Indian-Ugandan entrepreneurs. The government enforced the privatisation of formerly state-owned entities, foreign investment, private entrepreneurship and trade liberalisation.

³⁶ Gross National Income.

³⁷ ITU Telecommunication Indicators, 2004.

³⁸ The CIA World Factbook.

89. During the past nearly two decades, donors, including the IMF and the World Bank, have provided sustained support to the country. A major component of the Government of Uganda's policies has been the development of the private sector in Uganda.

Reforms and Universal Access

Creating regulatory framework

90. As stated previously, Uganda was, when the Uganda Communications Act was passed in 1997, one of the least telephone-penetrated countries in Africa, at 0.3% of the population. The Act created an **independent regulator: the UCC** (Uganda Communications Commission). Uganda's Communications Act is very specific in the following aspects:

- The Act allows policy guidance (in written form) by the Ministry of Communications only *after* discussion with the UCC³⁹;
- It plans for civil society participation in nominating the Commissioners appointed to the UCC;
- The UCC is financed independently from the Ministry of Communications (from spectrum and license fees), and the UCC manages the Rural Communications Development Fund (see paragraph c/)

Introducing competition

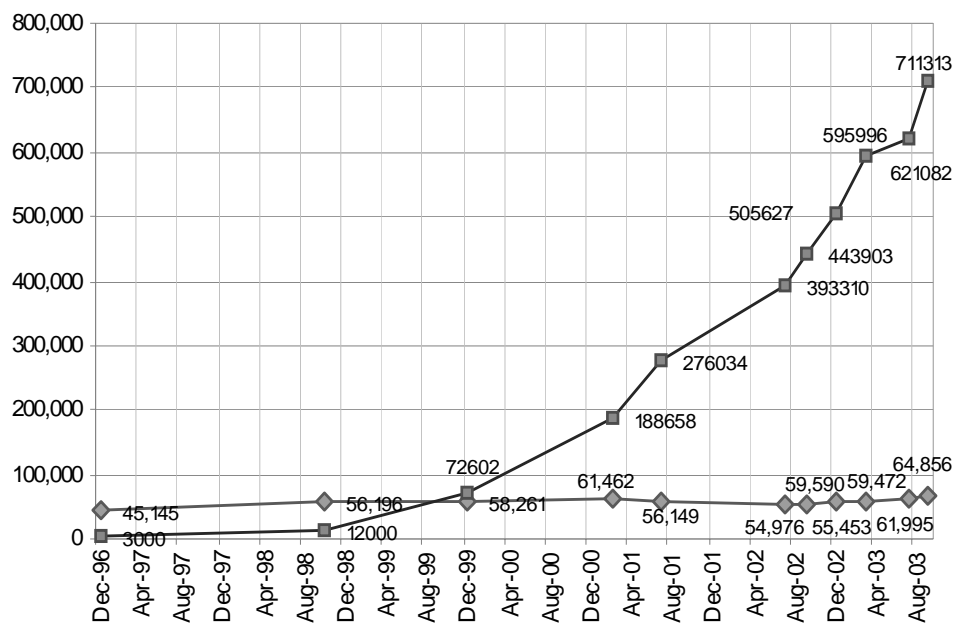
91. Following reforms to establish a competitive market, telecommunications penetration, especially mobile penetration in urban areas, increased dramatically (by over 1,100%, from mid 1998 to mid 2003), to reach 3.6% of the population⁴⁰.

92. The period 1998 to 2003 saw tremendous growth, especially in mobile telephony. Mobile phone subscribers grew by an astonishing 5,800 per cent, from 12,000 in 1998 to 750 000 end of March 2004⁴¹ – as opposed to fixed lines, which grew by five per cent from 56,196 in 1998 to 64,856 lines in September 2003. Around 90% of subscribers are on the three mobile networks of UTL (Mango), MTN Uganda and Celtel.

³⁹ 1 Sept 2004 discussion with F.F. Tsubira

⁴⁰ Source: Calculated from data on the UCC web site

⁴¹ From MTN 2004 Business report (MTN Claims 495000 mobile subscribers and 66% of the mobile subscriber market)

Figure 4: Growth of mobile and fixed connections in Uganda

Source: Uganda Communications Commission (website, August 2004)

93. The number of mobile operators increased from two to three and VSAT international data gateways from three to eight in the same period⁴².

94. A digital backbone is also being built by both the incumbent telecommunications operator, Uganda Telecom Limited (UTL), and the second national operator, MTN Uganda (see Annex 11 for more detailed information on operators). The networks were planned to link virtually every regional centre (district headquarters town) into a national backbone. UTL's wired network is not extensive outside of the district centres, and the most prevalent service being deployed by MTN is GSM. However, every GSM base station tower is a potential hub for a broadband wireless system⁴³.

Uganda's Universal Access strategy

STEP 1: Governments/regulators set Universal Access policy and mechanism(s), with clear goals, through analysis of existing situation, stakeholders' plans, and analysis of baseline demand.

95. In 2001, Uganda was one of the first countries in Africa to develop a Universal Access policy, the Rural Communications Development Policy, to expand coverage to rural areas where over 80% of the population lives⁴⁴ (a majority of telecommunication services are in urban areas).

96. Universal Access policy, as an element of telecommunications policy, specifies the coverage goals in function of existing infrastructure and market/demand structure, as well as the means to achieve these goals. Consultation with sector stakeholders and baseline demand analysis were conducted to set realistic targets.

⁴² UCC web site, August 2004.

⁴³ UCC, 2004b.

⁴⁴ PANOS, 2004.

97. This policy is two-pronged.

A/ Roll-out obligations

98. First, contractual obligations were set on the two national operators; during the issuing of licenses, the UCC included obligations for operators to install and maintain a specific number of rural lines and public phones in underserved localities. For example, MTN Uganda was obligated to install 30,000 additional lines according to a regional distribution, of which 3,000 public telephone booths.

Table 1: Roll-out obligations in MTN and UTL's licenses

| Region | MTN subscriber lines | Of which, public payphones | UTL subscriber lines | Of which, public payphones |
|------------------------------|----------------------|----------------------------|----------------------|----------------------------|
| Kampala Area | 48 702 | 643 | 10 000 | 1 000 |
| Central | 13 885 | 437 | 5 000 | 500 |
| Eastern | 16 122 | 495 | 6 000 | 600 |
| Northern | 3 962 | 129 | 3 000 | 300 |
| Western | 6 934 | 296 | 6 000 | 600 |
| Total Restricted Obligations | 89 605 | 2 000 | 30 000 | 3 000 |
| Unrestricted Obligations | 0 | 0 | 70 000 | 0 |
| TOTAL | 89 605 | 2 000 | 100 000 | 3 000 |

Source: Shirley, 2002⁴⁵

99. Overall, MTN claims that the Government of Uganda is satisfied with its meeting its roll-out targets⁴⁶. However, UTL's results with roll-out targets are less clear. Both mobile providers have complained that they cannot roll out their services to agreed areas because they have to operate in districts which do not have electricity.

B/ Universal Access Fund

100. Second, Uganda developed a Universal Access fund in 2001 – the Rural Communications Development Fund – operating on principles emerging internationally as best practice for allocating “smart subsidies” to private companies that wish to serve the Universal Access market. UCC's 'Rural Communications Development Policy', states: “*The RCDF shall be used to establish basic communication access, through smart subsidies, to develop rural communications. That is, the RCDF shall be used to encourage commercial suppliers to enter the market but not to create unending dependency on subsidy*”.

101. The Fund's strategy covers both rural telephony and Internet, with rural telephony planned to require the largest disbursements.

⁴⁵ SNO (Second National Operator) from MTN license, Annex 3. UTL from IFC. Information Memorandum. Sale of UTL 1997.

⁴⁶ MTN, Business Report, 2004

Figure 5: Uganda's Rural Communications Development Fund (RDCF) as an example of UAF financing

| Projected total amount of fund revenue and expenditure by 2005 (cumulative 6 years 2000-2005): \$ 16.19M | |
|--|--|
| IN-FLOW | OUT-FLOW |
| Levy on telecommunications sector of 1% (grows as the telecommunications sector develops and coverage expands): 67% | Public Telephony in 154 sub-counties: 37% |
| | Vanguard educational ICT: 8.6% |
| | Other projects*: 8.3% |
| | Internet POPs: 6.1 % |
| Seed financing (Donor): 31% | Pilots: 1.5 % |
| Initial endowment: 2.5 % | Safety margin (reserves) – 38% |

Source: Calculations based on projected data from the UCC, 2004

* Other projects include a domestic Internet Exchange Point (IXP), Vanguard schools & educational institutions ICT projects (first seven projects), Rural post franchise support costs, ICT training capacity investment, and ICT Awareness and ICT Content creation projects

STEP 2: Regulators designate areas and services for which the social and political value of access to telecommunications is high and for which it is viable in the long-term to provide service commercially, but where operators are unlikely to invest in the short-term. Regulators specify the number of locations for telecommunications services.

102. Uganda's strategy included a "Rural ICT Baseline Study", identifying user needs, preferences and demand for communications services at community and household level in every region of the country. This determined the level of supply that is demanded, the level of payphone and other ICT placement justified in the Universal access strategy, how the markets will develop, and which areas the Fund will need to focus on. This data will be made available to new bidders in the auction process⁴⁷.

Specific Objectives of Uganda Rural Communications Development Policy

- Ensure that all sub-counties (926 rural sub-counties) with at least 5,000 inhabitants have access to basic communications services by 2005.
- Support establishment of an Internet Point of Presence (PoP) in every District of Uganda by 2004 (45 districts), allowing local rate charges for internet access at District level
- Introduce ICT use in at least one "vanguard" institution by 2004.
- Promote **provision of communication services as a profitable business.**

⁴⁷ Dyamond and Oestmann, 2002

A/ Telephony objectives: provide service or lose exclusivity

103. In order to achieve its UA telephony objective, UCC first requested the two licensed national operators, UTL and MTN Uganda, to declare in which sub-counties they would be able to achieve the target level by mid-2002. In accordance with the specific provisions of their licences, the national operators effectively gave up their right of exclusivity in sub-counties that were not included in their declaration.

Table 2: National operator coverage mid 2002

| National operator coverage mid 2002 | Sub-counties |
|--|--------------|
| Served by both operators | 356 |
| Served by one operator | 416 |
| No coverage (i.e. 'unprotected' by both operators) | 154 |
| Total country-wide | 926 |

Source: UCC, 2004b

104. 154 sub-counties were left 'unprotected' by the national operators for competitive entry, i.e. were **unlikely to be served in the short-term**. UCC decided to offer these 154 sub-counties for competitive entry and to offer subsidies towards the net cost of providing services through a minimum-subsidy auction.

B/ Internet objectives

105. The Fund's strategy includes the extension of Internet presence to the whole country.

106. Many previous experiences (c.f. previous chapter on Latin American experiences) focused on telecentres and other *user projects*, but results overall were not very positive. But unless Internet POPs are already available, each project requires its own special Internet access plan. This may not necessarily contribute to the promotion of private sector access or the Internet market generally⁴⁸.

107. The UCC decided that in view of existing Internet infrastructure, the most logical "next step" of national Internet development in Uganda would be to first provide financial support from the Fund to deploy **minimal level Internet points-of-presence (POPs)** in every district centre. These include local dial access to the Internet and a broadband wireless hub. Having local (district-level) Internet points-of-presence enables cheaper access to the Internet e.g. for schools, agencies, local government, commercial and public Internet cafés, and businesses: they can use low cost local telephone dialling or purchase a high speed wireless terminal to access the Internet.

108. The Fund thus decided to facilitate the Internet POPs as a first step through competitive subsidy auction.

109. However, UCC also decided that along with or following immediately behind each Internet POP, 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 help to promote the start-up of the local Internet market on a commercially sustainable basis.

⁴⁸ UCC, 2004b.

110. A recent study has shown that some of the first users will be small Internet cafés that offer public access, most of which will not need subsidies. Thus the RCDF café subsidy program would no longer be needed⁴⁹.

STEP 3: Regulators estimate a maximum level of subsidy, by calculating by how much additional cost incurred (making technology assumptions, although operators are then free to choose appropriate technology) exceeds anticipated demand. Since subsidies are explicit, it is easier for both governments and operators to determine whether the benefits justify the costs. Less attractive areas are bundled with more attractive areas, to ensure the resulting “package” receives bids.

111. The UCC has calculated a maximum level of subsidy per area taking into account expected costs minus expected revenue (see Annex 12 for details).

112. For public telephony, the 154 sub-counties are packaged as **three separate geographical licence areas**. Sub-counties expected to require little subsidy are packaged with some of the most remote sub-counties (typically in the far North and North-East), expected to be challenging operationally and to require higher subsidies. Packaging of regions tried to ensure contiguous territory⁵⁰. Bidders are allowed to bid for one, two or all three UA Regions.

113. In the first phase, the operators must provide a minimum of one public access telephone per sub-county, located in the sub-county’s main or most central trading centre. Rural messaging capacity is also mandated as part of the required service package.

114. Bidders can choose the (proven) technology that they want to provide service, so they can use the mix of technologies that is most cost-efficient. It is expected that whereas mobile operators will bid selectively, fixed VSAT based operators may seek to increase their economy of scale by bidding competitively for all together⁵¹.

115. Furthermore, after the end of exclusivity over voice telephony in 2005, they will be able to expand and become national operators.

STEP 4: The private operator who bids for the minimum subsidy from the Universal Access Fund is selected to provide service.

A/ For public phone provision, operators were first requested to apply to **pre-qualify** (this process was due to be completed May 14, 2004).

116. The April 2004 “Request for Applications to Pre-Qualify to provide Universal Access Telecommunications Services” (RFPQ) specifies requirements in terms of **operational experience** of public phone bidders. They must:

- already have a network with over 5,000 subscribers for voice services in rural areas; or a combined total of over 250 public access telephones and/or telecentres offering voice and data services in rural areas;
- have their own the facilities-based network;

⁴⁹ UCC, 2004b.

⁵⁰ UCC, RFPQ, 2004a.

⁵¹ Dymond and Oestman, 2002.

- the network must be located in Uganda or in one or more developing countries or emerging markets; and
- have been operating the network for at least three years.

117. The RFPQ also specifies requirements in terms of **financing capacity**, of at least US\$2 million.

118. In addition, since the Fund is partly financed by the World Bank, applicants must be eligible under the World Bank Procurement Guidelines under IDA credits.

B/ Then, operators that successfully pre-qualify will be invited to bid, and the operator who bids for the minimum subsidy from the Universal Access Fund will be selected to provide service in the designated areas.

C/ The UCC has planned monitoring and evaluation of projects but not fully developed yet.

Results of Pilots

119. The UCC initiated a few minimum-subsidy auction pilot projects in September-November 2002, to generate interest in the RCDF program, refine its rural market knowledge, and help fine-tune its methodology. The projects are all operational. Each successful bidder received a subsidy amount ranging from 30 to 50% of the investment costs (except IT Content Development that is fully financed by the Fund). These helped the UCC build experience and generated interest and donor funding.

Table 3: Results of UCC pilot projects

| PROJECT | COMPANY SELECTED | AMOUNT USD |
|---|---|-------------------|
| Public pay phones: 20 locations in Eastern Region, 20 in Central Region, 30 in Western Region | MTN Publicom (Uganda) Ltd was selected to install 69 public payphones | 66 000 |
| Internet Points of Presence (26 districts) | UTL was selected to establish 20 Internet POPs | 107 000 |
| Internet Cafes (26 districts) and some ICT training | Several companies selected | 24 000 |
| IT Content creation | Uganda Home pages was selected to develop IT content in the 26 selected districts | 87 102 |

Existing issues

Country-wide minimum-subsidy auction

120. The international community is currently awaiting the results of the first country-wide minimum-subsidy auctions to expand telecommunications to rural areas in Uganda (to take place in 2004), after the implementation of small-scale pilots. Uganda has benefited from much donor support and “state-of-the-art” advice, so that results will confirm or infirm existing “best practice” knowledge.

Tariffs and interconnection

121. The **tariffs** that rural operators can charge to users and the **interconnection** revenues (from other operators) applied to rural operators are important regulatory determinants of the success and viability of the minimum subsidy mechanism since these two sets of revenue determinants must, along with the requested subsidy, ensure that the licensee is financially viable⁵².

122. The UCC has not developed a tariff methodology (other than utilising prices proposed in winning privatisation tenders as caps)⁵³. This means that operators are flexible to set prices in function of demand and required return-on-investment. On the other hand, there is also a risk that operators charge excessive tariffs as they will have a de facto monopoly (see Annex 13).

123. Interconnection standards and procedures have not been specified either. The UCC's Request for Applications to Pre-Qualify to provide Universal Access Telecommunications Services of April 2004 states that "The licensee may negotiate interconnection with the incumbent major network and cellular operators. The Act empowers UCC to impose an interconnection agreement on two operators where a negotiated agreement is not possible or if UCC determines that such agreement promotes fair competition" (see Annex 13)

Implications for Donors

124. Universal Access policies, such as that of Uganda and also of the Latin American countries reviewed, have leveraged donors and external contractors' experience in several respects:

- To increase quality of analysis accompanying the set-up of Universal Access Funds (including through baseline demand studies, help with determine the areas to be subsidised, the service level agreements, and the bidding process).
- Seed funding of the Universal Access Fund by donors has also been important to launch UA: where number of users (taxable users) is small, levies on telecom tariffs or prices are high in percentage terms, making service unaffordable, or, if kept low, bring in negligible revenue and not worth the effort involved). Especially in the poorer developing countries, donors can play a crucial role in financing the government roll-out (through seed finance, e.g. Uganda, Nicaragua, Nepal, Nigeria). However, in the case of Uganda, delays in World Bank seed financing disbursement delayed the implementation of major components of the project. This raises the question of whether the UCC should have gone ahead three years before albeit with limited funding, or wait for a grant that was implemented four years late⁵⁴.
- Donor-financed pilots have helped developing countries build experience and capacity in managing minimum-subsidy auctions.
- Donors also have an important role to play in helping to coordinate regional policies, and integrating rural communications backbone.

⁵² Sepúlveda, 2004c.

⁵³ UCC, Rural Communications Development Policy For Uganda, 2001, p 19, paragraph 3.4.9 Tariffs for Rural Communication Services.

⁵⁴ 1 Sept 2004 written feedback by F.F. Tsubira.

CONCLUSION

125. The combination of competition in telecommunications, incentive regulation and new technologies hold potential to extend telecommunications infrastructure to the rural poor.

126. However, few governments, in both OECD and developing countries, are leaving the goals of Universal Access or Universal Service solely to the market, demonstrating that extending telecommunication services to the rural poor requires public sector support, policies, and initiatives.

127. A first level of public support concerns “market-enabling” measures for the telecommunication sector in general and specifically for rural areas. These include license rules and obligations, interconnection rules, and tariff regulation.

128. A second level of support concerns subsidising rural zones deemed unattainable through markets alone. In particular, Universal Access funds, that use well-designed minimum-subsidy auctions, are a promising mechanism to expand telecommunication infrastructure to the rural poor. They are based on public sector equity concerns, but leverage private sector dynamism at all levels. Indeed, subsidies aim to be explicit, transparent, cost-based, and are determined and allocated through the market.

129. We have reviewed lessons that emerge from experiences with minimum-subsidy auctions for Universal Access. Several design factors help optimise the three goals of increasing access of the rural poor to telecommunications, while enabling rural telecommunications operator sustainability, and minimising cost to governments and donors. The model is a promising one, which has proven its potential in Latin America to yield results.

130. The co-operation of the international donor community can assist the seed financing and launch of these “pro-poor” telecommunication funds, which can deliver high returns on aid money.

131. Later on this year, when Uganda conducts its first country-wide minimum-subsidy auction to allocate UAF subsidies, and in the next years when projects are implemented, the international donor community will be attentively watching the outcomes of the first African UAF minimum-subsidy auction. Indeed, if successful, it could well prove to be replicable throughout the African continent to help address the communication needs of the rural poor.

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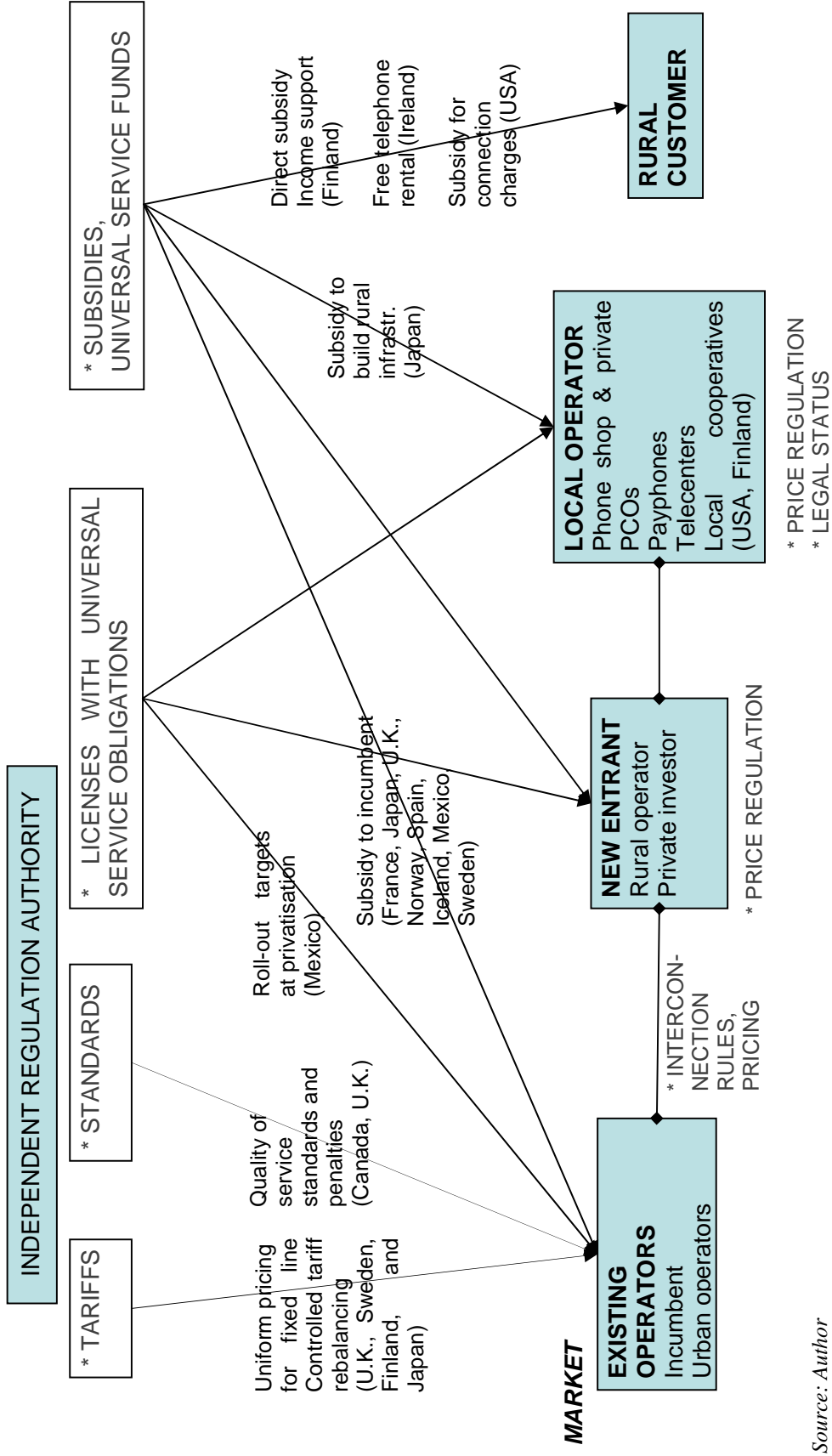
ANNEX 1: SIMPLIFIED TABLE OF MAIN MECHANISMS TO PROVIDE UNIVERSAL ACCESS

| MECHANISM / COUNTRIES IMPLEMENTED | DESCRIPTION | ADVANTAGES | DISADVANTAGES |
|---|--|--|---|
| <p>1/ UA obligations on incumbent</p> <p><i>Mexico, South Africa, France, Japan</i></p> | <p>Under this mechanism, the incumbent operator is mandated to provide Universal Access/Service (and takes on carrier-of-last-resort responsibilities). Monopoly operators traditionally used cross subsidies from profitable market segments (such as international) to meet Universal Access objectives in uneconomic regions (such as rural). But with competition, cross-subsidies are less and less practicable. Incumbents thus finance Universal Access either by charging higher interconnection fees to other operators, by using a Universal Service fund, or by accessing direct government subsidies.</p> <p>Choosing the incumbent as carrier of last resort can make sense in the first stages of transition to a market-based system, since the incumbent has a market advantage over new entrants, legitimating burdening it with Universal Access responsibilities.</p> | <p>- economies of scope and scale</p> | <p>- little incentive to improve access and decrease costs</p> <p>- calculating costs of Universal Access/Service obligations can involve fairly sophisticated computations</p> <p>- difficult to determine areas of coverage</p> <p>- market distortions</p> |
| <p>2/ Private operator/new entrant obligations</p> <p><i>Uganda, India, Ghana, The Philippines</i></p> | <p>Referred to as roll-out or network build-out obligations, obligations are imposed on operators to connect a specified number of subscribers or localities. This obligation may be limited to certain geographic or population groups, such as a requirement to serve rural areas above a certain population.</p> <p>Build-out requirements are bundled with one or more items of value: a license (permission to operate), access to spectrum, and/or freedom from regulation for a fixed period. Attaching obligations to these assets reduces what operators pay for the asset.</p> | <p>- potentially low administrative cost</p> | <p>- roll-out targets often not met</p> <p>- necessary monitoring and sanctioning capacity</p> <p>- depends on capacity of regulators to match profitable and unprofitable zones optimally</p> <p>- difficult to impose realistic objectives on operators</p> |
| <p>3/ Universal Access fund with "smart subsidies"</p> <p><i>Uganda, Peru, Ghana, USA,</i></p> | <p>The Universal Access fund approach is seen as the best option in an increasing number of developed and developing countries. They are sometimes called USO funds, US funds or UA funds. The fund is financed by a tax on the telecommunications sector operators, general tax funds, or the sale of resources such as privatisation or sale of licenses (e.g. Guatemala).</p> | <p>- low public cost, as cost spread over several actors in telecommunications sector</p> <p>- sustainable (as sector grows, so does fund)</p> | <p>- effectiveness depends on allocation mechanism (see below)</p> <p>- risk of under-reporting revenues to avoid levy</p> <p>- requires independence of administrators</p> <p>- requires monitoring service delivery</p> |

| | | | |
|---|---|---|---|
| <p><i>Nepal, Brazil (1-3% of sector revenue)</i></p> <p><i>El Salvador, Chile (general tax funds)</i></p> <p><i>Guatemala (sale of resources such as privatisation or sale of licenses)</i></p> | <p>Competitive bidding for Universal Access funds, i.e. explicit service subsidies, is an increasingly popular mechanism to mobilise investment into challenging rural areas. Specific operators bid to service rural zones and are compensated for the losses incurred.</p> <p>The design of the auction is crucial to ensure that the objectives are met. Governments/ regulators designate areas or communities where social value of access to telecommunications on estimated cost is the greatest. They specify the number of locations for payphones, a maximum price per call, and a maximum level of subsidy.</p> <p>The private operator who bids for the minimum subsidy from the Universal Access Fund is selected to provide service.</p> | <ul style="list-style-type: none"> - competitively neutral - transparent - objective (quantitative criteria) - less market distortion - allow to discover real value of subsidy required | <ul style="list-style-type: none"> - design of auction is crucial - risk of under-bidding and insolvency ("winner's curse") - necessary expertise of administrators regarding interdependencies of items auctioned to enable economies of scope - administrators must bundle regions into sufficiently attractive packages to attract several bidders |
| <p>4/ Public-private partnerships</p> <p><i>Indonesia, Thailand, Venezuela, Kenya</i></p> | <p>The comparative selection procedure differs from auctions in that service providers are selected qualitatively (as opposed to quantitatively) in function of pre-defined criteria. Selection is more likely to be partly subjective.</p> <p>Several countries, in Asia particularly, have encouraged investors to build new facilities through partnerships known as Build Operate Transfer (BOT) in which the investors build the telecommunications network, operate it and receive a percentage of the revenues for a specified period, and then turn it over to the government. Joint-ventures also include incentives for investment in rural areas.</p> <p>Some countries have also used regional concessions to provide rural service (e.g. Venezuela, Kenya).</p> | <ul style="list-style-type: none"> - same as above - quality of bid, and operator profile, selected over minimising subsidies - designed to leverage private risk capital and skills, and government equity concerns | <ul style="list-style-type: none"> - risk of bias/ corruption by regulators, real or perceived - difficult balancing of risks between public and private sector - mixed success and low sustainability of experiences so far, with private sector lacking incentive for long-term success |
| <p>5/ Private-CSO partnerships</p> <p>Bangladesh Uganda</p> | <p>Civil society organisations (CSOs), such as NGOs (non-government organisations), non-for-profit, or rural cooperatives, can fill the gap where both the state and markets fail. Private-CSO partnerships for rural telephone connectivity have generated much enthusiasm, especially in the case of the GrameenPhone Village program in Bangladesh, which brings together a private telecommunications operator and a non-profit micro-credit scheme to purchase telephones along with private and public financing. The model is now being replicated in Uganda.</p> | <ul style="list-style-type: none"> - no public cost | <ul style="list-style-type: none"> - difficult to regulate |

ANNEX 2: SOME OF THE UNIVERSAL SERVICE MECHANISMS USED IN OECD COUNTRIES

GOVERNMENT/ REGULATORY INTERVENTION (*)



DEMAND SCHEMES

RETAIL SCHEMES

RURAL INFRASTRUCTURE SERVICE SUPPLY

Source: Author

ANNEX 3: GUIDING PRINCIPLES BY THE OECD ON UNIVERSAL SERVICE IN A COMPETITIVE ENVIRONMENT

Adapted from OECD, 1995, *Universal Service in a Competitive Environment*, ICCP (Information Computer Communications Policy)

Report context: By the mid 1990s, when this report was produced, several OECD countries had liberalised their telecommunications sectors and demonstrated the feasibility of liberalising telecommunications markets while retaining universal service. From that point onwards, the debate was mostly won, and most OECD countries liberalised their telecom markets (more or less quickly), while implementing universal service safeguards in their regulatory systems.

This report from 1995 provides guidelines on the process and procedure to meet universal service objectives, where they are deemed appropriate, in a cost effective way.

Overall, competition expanded coverage and decreased prices, both core elements of universal service.

However, the report identifies some effects of competition that could impact unfavourably on the "availability" of telephone service. It details the various mechanisms to address these problems (using more cost-effective mechanisms than the traditional cross-subsidisation schemes used by monopoly incumbents), to pursue universal service objectives in a competitive environment.

The report emphasises the need to **carefully structure and narrowly target universal service mechanisms** so as not to impede pro-competition policies. It provides a framework and a set of principles for (re)considering the identification, costing, funding, reporting and monitoring of universal service which is applicable to OECD countries, to assist in the task of developing policies and programmes to provide and fund universal service.

Main points include the need to:

1) Articulate universal service objective and coverage clearly and specifically;

Debate on **means** to achieve universal service should come after **clarifying** its **ends**, since poorly stated objectives can result in conflicting goals and the implementation of unintended policies, or represent an excuse for unsatisfactory economic and commercial performance. Breaking down the broad objective of universal service into a range of distinct, achievable and measurable targets for its sub-components can be useful, such as: (i) universal geographic access; (ii) universal affordable access; (iii) universal service to the disabled; (iv) universal quality of service (which includes call failures rates, transmission quality); and (v) tariffs for universal service (pricing restrictions placed on operators).

It is also important to bear in mind that universal service is not a static but a dynamic concept which requires procedures for periodic review and redefinition of services.

2) Identify barriers to universal service;

Considerable community consultation and research, including surveys, is necessary to identify the barriers to universal telecommunications access and usage.

Barriers to universal service may include **pricing**-related issues, with, as a consequence of competition, prices rebalancing towards costs, i.e. higher local prices and lower long distance and international prices. Issues may involve a) telephone call prices; b) installation charges (these costs can be largely dependent on the subscriber's location); c) rental charges; and d) deposit requirements.

e) Technological infrastructure and service innovations enabled by competition may, on the other hand, benefit universal service (technological innovations can enable telephone connections at much lower cost)

Other barriers to universal service may include f) quality of service (including high rates of call failures); g) disconnections from the network; h) physical disabilities; and i) voluntary non-subscriptions.

3) Identify schemes which could cost-effectively address the identified barriers to universal service:

Successful practices of other countries can be useful.

But more imaginative schemes may be required that would permit an examination of the reasons why people do not to have a telephone.

4) Estimate the cost of universal service

The appropriate concept upon which to base cost estimation is long-run avoidable (marginal) cost. However, this cost establishes only the lower level for compensation payments to the universal service supplier. Actual payments can recognise some joint and common costs. Thus, actual payments would be somewhere between the levels prescribed by the Avoidable Cost approach and the Fully Distributed Cost approach.

5) Consider the merits of alternative mechanisms for funding universal service;

The criteria which could be used to evaluate the merits of a particular universal service mechanism include: transparency, equity, efficiency, cost effectiveness, flexibility, incentive compatibility with a competitive environment, predictability, accountability and costs of implementation and administration.

Funds to support universal service schemes can come either from taxation, levies on telecommunications users, or from the operator(s). Where the third option is preferred, the advantage of transparency is preserved if a universal service fund is established through contributions from all competing operators.

Whatever the mechanism chosen; it is important to ensure that it is carefully structured and targeted so as to ensure that subsidies do not lead to market distortions.

6) Report progress in achieving universal service targets regularly and publicly

All universal service providers should be required to present in their annual reports a separate account of universal service activities as distinct from commercial activities.

At very least, a system of reporting would raise the public profile of universal service activities and thereby serve to increase the attention which the operator gives to its performance in the provision of these services. This would help ensure that universal service concerns are not reduced in priority due to competitive pressures.

To maintain the benefits of a competitive (or contestable) market in the supply of universal service, the option for the current universal service provider to be replaced by a more cost-effective supplier should be preserved.

7) Monitor and evaluate performance in universal service delivery regularly

Arrangements should be established to ensure that the delivery of universal service requirements is independently monitored and assessed, by regulators and by consumer groups.

One aspect of the performance evaluation is to compare achievements against the preset universal service targets. The performance indicators selected should be relevant to both monitoring and improving performances.

ANNEX 4: UNIVERSAL SERVICE OBLIGATIONS AND BROADBAND

Adapted from OECD, 2003, *Universal Service Obligations And Broadband*, Working Party on Telecommunication and Information Services Policies

In the context of broadband, the OECD proposes a systematic consideration of how a review of the scope of the Universal Service Obligations could be conducted in a systematic manner, by first identifying the sources of the problem, and then specifically addressing them with tailored cost-effective measures, among which universal service obligation as a possible policy instrument. The goal is to **make sure that ‘supply-side’ as well as ‘demand-side’ policy initiatives are coherent, consistent and cost-effective**. Main points include the necessity of:

1/ **Elaborating a clear definition** (of broadband), that is realistic in terms of technological capacities but that also minimises the need for ongoing adjustment

2/ Considering whether the service is an **essential** service of significant ‘social importance’

3/ Assessing **market maturity** (of broadband service) in terms of:

- **Market penetration** (expected), and assessing the nature and extent to which broadband will not be made available by the market and **why**.
- **Technology**, and assessing whether technology is mature enough to enable government interventions to remain **technologically neutral** i.e. not support one delivery mechanism over another.
- **Competition**, and assessing whether interventions can be **competitively neutral**, since subsidisation programmes carry the risk of limiting competition in the scenario where potential market entrants cannot compete with subsidised providers.

4/ **Identifying and specifying objectives** and desired outcomes clearly and specifically, and assessing the extent to which market demand and delivery can/will meet the specified objectives.

5/ Identifying the **costs and benefits** of intervention through the universal service mechanism, by considering:

- cost of delivering broadband service to consumers in rural and remote areas;
- incidence on unsubsidised telecommunications/Internet/broadband Internet customers;
- effects on other communications and broader policy objectives;
- benefits of providing subsidies (as opposed to the social and economic disadvantages incurred by those without access to broadband if there is no government intervention) and;
- costs through the use of the Universal Service Obligation mechanism compared against the use of other approaches such as general welfare programmes and targeted support to low income users;

**ANNEX 5: BENEFITS AND CHALLENGES FROM LIBERALISATION OF THE
TELECOMMUNICATIONS SECTOR**

| Benefits | Challenges |
|--|--|
| <ul style="list-style-type: none"> - Revenue: Taxes from new entrants and license fees - New innovative services - Lower long distance and international prices (eventually lower local prices) - Increase of foreign direct investment (FDI) in the telecommunications sector, and eventually increase in FDI in other sectors - Boosts information and communication technology (ICT) development and information society | <p>DURING A TRANSITION PERIOD:</p> <ul style="list-style-type: none"> - Incumbent is no longer a “cash cow” - Tariff rebalancing, (i.e. prices re-orienting towards costs as cross-subsidies are phased out) means that in the short-term, prices of local connections and line rentals increase - Initial job losses |

ANNEX 6: SUMMARY TABLE OF RESULTS OF MINIMUM-SUBSIDY AUCTIONS IN CHILE, PERU, COLUMBIA, GUATEMALA, AND THE DOMINICAN REPUBLIC

| Country | Name | Source of Finance | Period | Localities served | Max. 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 | 1,937 | 50.0 | 11.0 | 5,700 |
| | | | 2000 (1) | 2,290 | 59.5 | 27.8 | 12,100 |
| Colombia | Fondo de Comunicaciones (Compartel) | Operator levy & Gov. contribution | 1999 | 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 |

Source: Dymond, 2002

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

ANNEX 7: RESULTS OF MINIMUM-SUBSIDY AUCTIONS FOR PUBLIC PAYPHONES IN RURAL AREAS OF CHILE, PERU AND COLUMBIA

(Source: Sepúlveda, E., 2004a)

CHILE

The Chilean UAF, the Fondo de Desarrollo de Telecomunicaciones (FDT), was established in 1994.

FDT is financed through direct government budget allocations.

From 1995 to 1999, the fund was only used for public access telephony, and 183 separate projects were auctioned and approved (later FDT also funded access to the Internet). These projects covered 5 916 localities and served a population of about 2 157 million. A public access telephone was required to be installed and operated in each locality. On average, each public access telephone provided service to about 365 people.

Competition between bidders halved the actual subsidies paid (USD 21.04 million), compared with the maximum subsidies available (USD 42.15 million). The average actual subsidy per locality (public access telephone) was USD 3 600.

In Chile, USD 1 of public subsidy leveraged over USD 6 of private investment in Chile.

Table 4: Chile - Subsidies allocated per company 1995-1999

| Firm | Actual subsidy granted (USD 000 000s) | Actual subsidy granted (%) | Number of localities | Percentage of localities |
|--------------|---------------------------------------|----------------------------|----------------------|--------------------------|
| CTC | 5.92 | 28.1 | 1,880 | 31.8 |
| CTR | 3.32 | 15.8 | 1,843 | 31.2 |
| GENEVA | 0.43 | 2.0 | 153 | 2.6 |
| GVT | 7.67 | 36.4 | 1,737 | 29.4 |
| MEGACOM | 3.71 | 17.6 | 303 | 5.1 |
| TOTAL | 21.04 | 100.0 | 5,916 | 100.0 |

Source: Memoria 1999, Fondo de Desarrollo para las Telecomunicaciones, Memoria 1999, Subtel.

PERU

The Peruvian UAF, The Fondo de Inversión en Telecomunicaciones (FITEL), was created in 1993.

FITEL is financed through a mandatory contribution from telecommunication operators at 1% of gross revenues after taxes.

FITEL conducted a pilot first, to test the programme's design (Northern Frontier pilot project).

The first nation-wide bidding for fund subsidies took place in 1999, with three projects, corresponding to the South, Centre South and Jungle North regions of Peru.

Three participating bidders submitted individual bids for the three projects. However, the winning bid was a combined bid for all three projects of USD 10.99 million (well below the maximum available subsidy of USD 50 million).

Table 5: Peru Actual Bidding Results for the 1999 Process

| | | Actual bidders (USD 000 000s) | | |
|--------------------|------------------------------------|-------------------------------|--------|-----------------------|
| | Project | Global Village Telecom | CIFSA | International Telerep |
| Individual bid | South | 21.31 | 5.16 | 3.94 |
| | Centre South | 25.52 | 8.70 | 6.43 |
| | Jungle North | 22.44 | 4.39 | 3.19 |
| Combinatorial bids | South & Centre South | 38.76 | No bid | 8.43 |
| | South, Centre South & Jungle North | 53.27 | 16.90 | 10.99 |

Source: ITU, 2003

COLOMBIA

The Colombian UAF, COMPARTEL, was established in 1998.

COMPARTEL is financed from mandatory sector contributions and from national government finances.

The first complete bidding process took place in 1999. A total of six projects, consisting of 6 865 localities, were auctioned. The operators were required to install at least one public access phone in each designated locality. The total maximum available subsidy for all six projects was USD 70.6 million.

Table 6: Colombia - Summary Results of the 1999 Process

| <i>Project</i> | <i>Localities</i> | <i>Maximum subsidy (USD 000 000s)</i> | <i>Actual subsidy granted (USD 000 000s)</i> | <i>Actual subsidy per locality (USD 000s)</i> |
|----------------|-------------------|---------------------------------------|--|---|
| North-East | 1 574 | 11.61 | 5.19 | 3.3 |
| Atlantic Coast | 861 | 10.40 | 4.62 | 5.4 |
| Centre West | 1 561 | 13.92 | 6.20 | 4.0 |
| South-East | 362 | 14.95 | 7.14 | 2.0 |
| Coffee Region | 1 074 | 3.05 | 1.27 | 1.2 |
| East | 1 433 | 16.67 | 7.42 | 5.2 |
| Total | 6 865 | 70.60 | 31.84 | 4.6 |

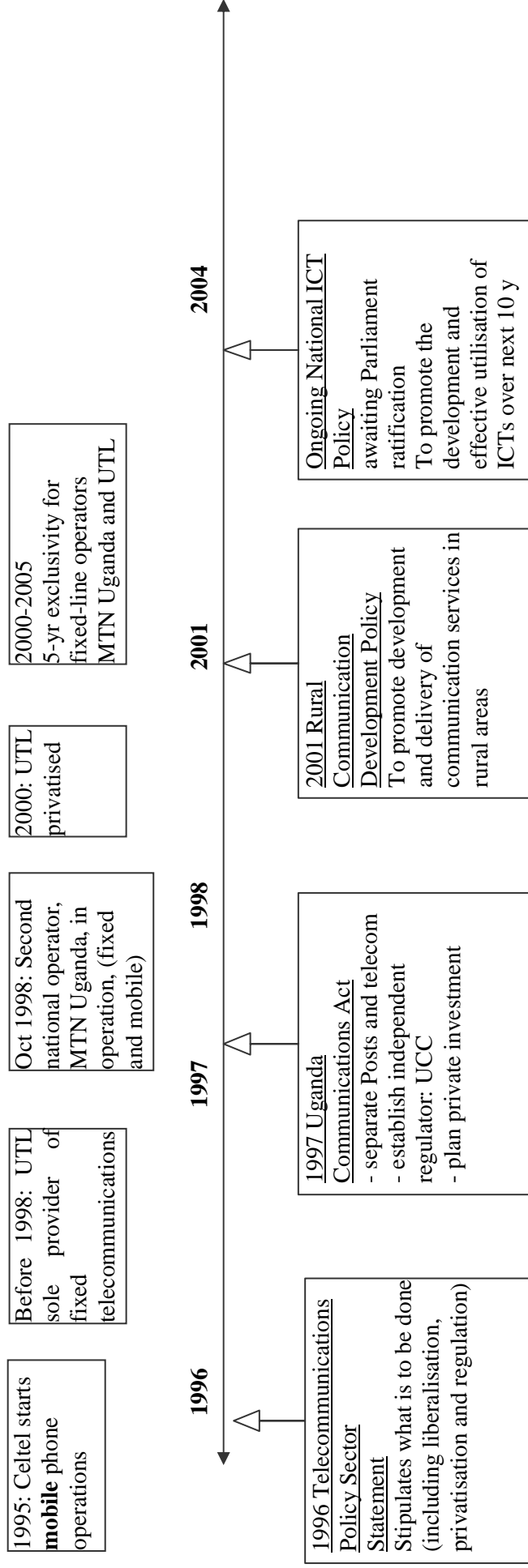
Source: ITU, 2004

Table 7: Colombia - Actual Bidding Results for the 1999 Process

| <i>Project</i> | <i>Actual bidders (USD 000 000s)</i> | | | | | | |
|----------------|---|--|---------------|------------------------------------|-----------------|--------------------------|----------------------------|
| | <i>GVT and Gilat Satellite Networks</i> | <i>Telecom, Hughes Networks and others</i> | <i>EDATEL</i> | <i>Telefonia Social del Caribe</i> | <i>Oriental</i> | <i>ERT and Acuavalle</i> | <i>Emtelsa and Pereira</i> |
| North-East | 5.19 | 6.97 | 6.50 | | | | |
| Atlantic Coast | 4.62 | 6.76 | 8.25 | 7.99 | | | |
| Centre West | 6.20 | 8.35 | 13.40 | | 11.38 | | |
| South-East | 7.14 | 10.83 | | | | 14.50 | |
| Coffee Region | 1.27 | 2.13 | | | | | 2.10 |
| East | 7.42 | 10.00 | | | | | |

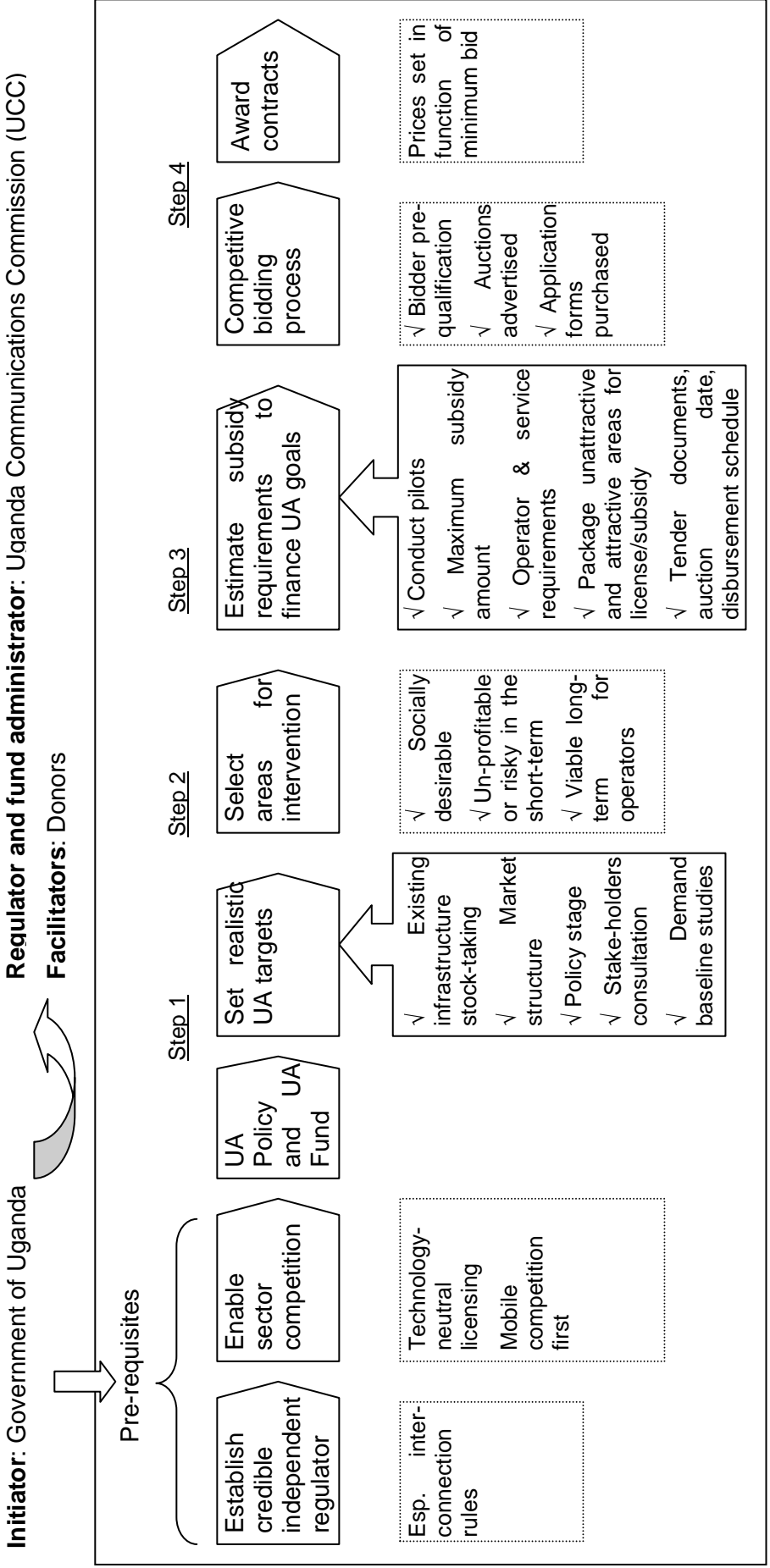
Source: ITU, 2004

ANNEX 8: UGANDA – TIMELINE OF SECTOR REFORM TO DATE



ANNEX 9: FLOW-CHART OF THE UNIVERSAL ACCESS POLICY

DCD/DAC/POVNET(2004)13



Stakeholders: Private operators (as well as other institutions and populations)



Users: Rural populations

ANNEX 10: EVOLUTION OF INSTITUTIONAL SET-UP IN UGANDA

Before 1996

The first mobile operator, privately-owned Celtel, started operations in 1995. However, it served high-end business customers and maintained prices high.

1996 and 1997 - Develop Policy on Communications

The **Telecommunications Policy Sector Statement of 1996**⁵⁵ stipulated **objectives** for reform and development of the telecom sector in Uganda:

- Establish an independent regulator, the Uganda Communications Commission (UCC);
- Increase Tele-density from 0.28 lines per 100 people to 2.0 lines per 100 people by 2002 (The ministerial policy statement for the year 2002/03 set a new target of 3 lines per 100 persons);
- Improve telecommunications facilities and quality of service as well as adding variety of new telecommunications services;
- Serve the unmet customer demand and;
- Increase the geographical distribution and coverage of the services throughout the country i.e. focus on rural network expansion

Some targets that were set included:

- National network digitalisation of 75%.
- Increase subscriber lines to at least 300,000 lines by 2002
- Improve the call completion rate

The **Uganda Communications Act 1997** laid down **how to achieve these objectives**. It separated Posts and Telecommunications, established the **regulatory body, the Uganda Communications Commission (UCC)** and opened the way for private investment.

Main functions of the UCC:

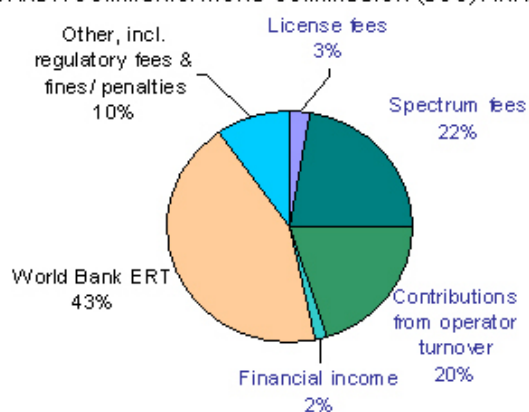
- set national telecommunications **standards**;
- ensure service **quality** and **equitable** distribution of services throughout the country;
- establish **tariff** systems to protect consumers;
- promote **competition**; and
- **license** and **monitor** communication services.

The Uganda Communications Commission (UCC)

The UCC regulatory body, is independent from politically and operationally. UCC is said to have managed to create a level playing field, ensuring that operators compete fairly. It has also promoted transparency, ensuring that regulatory decisions are open, fair and objective. Decision making processes, including licences, interconnection, tenders and other services are transparent.

The Uganda Communications Commission has indicated satisfaction with MTN Uganda's fulfilment of the minimum requirements under the SNO licence.

UGANDA COMMUNICATIONS COMMISSION (UCC) FINANCING



Source: data from ITU, 2003

⁵⁵ Government issued telecommunications sector policy "Minister's sector policy statement" in January 1996

1998, 2000 - Competition and privatisation in fixed line and mobile

The UCC oversaw the entrance of private sector competitors to provide fixed and mobile telecommunications infrastructure.

In April 1998, MTN Uganda was granted a “technology-neutral” license, as the country’s second national operator (fixed and mobile). It started operations in October 1998.

Competition from MTN in 1998 reduced Celtel’s rates and created rapid growth, including in the prepaid and public access markets. MTN today has more subscribers than Celtel (fewer than 50 000 compared with almost 400 000 in June 2003 for MTN). Nevertheless, MTN continues to face competition from Celtel, which recently introduced per-second billing to gain market share. In addition, Uganda’s mobile market has also seen a third entry with the new Mango mobile service rolled out by UTL, the Ugandan fixed-line incumbent. Mango has reportedly captured more than 100 000 customers.

UTL privatisation

An unusual scenario, the incumbent, **UTL** (Uganda Telecom Limited), was privatised two years **later**, in June 2000⁵⁶, through the sale of 51% of shares to a private consortium, Ucom (Telecel of Switzerland; Detecon of Germany and Orascom of Egypt). Two previous attempts to privatise UTL had failed at negotiation stage; for reasons including over-ambitious build-out targets (these were diminished in the negotiations that resulted in the successful license) as well as the licensing of the MTN before the sale of UTL, which gave the incumbent a competitive disadvantage. During the process, investment by UTL was held up and staff left. Meanwhile, MTN had become well established. Lessons from UTL’s privatisation include the need for realism in setting the requirements on private operators and the importance of reform sequencing⁵⁷.

Competition is not full: national operators UTL and MTN have a duopoly with a 5-year period of exclusivity (2000-2005) for national telecommunications services. The regulator assumed that providing exclusivity would make investments more attractive to private foreign investors and also make it easier to impose roll-out obligations.

MTN and UTL’s licenses include **roll-out obligations**⁵⁸ during their 5 year period of exclusivity and which are stipulated in their license agreements.

2001 onwards - Create RCDF (Rural Communications Development Fund) and plan rural strategy

Uganda was one of the first countries in Africa to implement a Universal Access fund – the Rural Communications Development Fund (RCDF). The RCDF aims to support the development of commercially viable communications infrastructure in rural Uganda, in view of social, economic and regional equity in the deployment of telephone, Internet and postal services.

⁵⁶ UCC, 2001

⁵⁷ Private Solutions for Infrastructure: Opportunities for Uganda, PPIAF (Public-private infrastructure advisory group), The World Bank,

⁵⁸ Shirley, 2002

Operations

The RCDF is administered by the Uganda Communications Commission (UCC), the regulatory agency.

All sector participants (including telecom operators, the postal service, couriers, ISPs) must contribute 1% of their revenues to the RCDF.

ANNEX 11: PROFILE OF MAIN TELECOMMUNICATIONS OPERATORS IN UGANDA

The current market consists of three players, two of which are national fixed-line operators with a GSM licence, and the third with a GSM licence only.

| |
|--|
| MTN Uganda: joint-venture with MTN Mauritius (52%), Telia (32%), Tri-Star Investments S.A.R.L. (13%) and Invesco Uganda Ltd (3%) |
| UTL: 51% Ucom (private consortium with Telecel of Switzerland; Detecon of Germany and Orascom of Egypt), 49% Government of Uganda |
| CelTel: 90% MSI (a Dutch cellular operator with operations in 13 African countries) |

MTN Uganda

MTN Uganda a joint-venture with MTN Mauritius (52%), Telia (32%), Tri-Star Investments S.A.R.L. (13%) and Invesco Uganda Ltd (3%). MTN Uganda's indirect "mother company" is MTN, a South African GSM service provider.

MTN Uganda is an upbeat efficient-looking private sector telecommunications company providing fixed and mobile voice services, bandwidth for ISPs and mobile data services. MTN covers 70 towns, and will cover most of the country by the end of the initial license period (2005). With a year's head start on Uganda Telecoms (UTL), and an efficient commercial sector approach, at the end of March 2004, MTN Uganda reported a subscriber base of 495 000 mobile subscribers, growth of 36% year on year.

MTN created a subdivision called MTN Publicom to provide **fixed-wireless payphones**, using a franchise-type arrangement. The payphone service was launched in December 1999, and the initial payphones installed in rural villages have been very popular. The payphones are especially used for international calls and calls to the MTN network.

Network infrastructure: MTN, with 257 base stations and US\$176 million in both fixed and mobile network infrastructure to-date, provides approximately 70% population coverage and 35% geographic coverage. Development in MTN Uganda's fixed-line infrastructure has seen further expansion of the fibre-based access network in Kampala, being supplemented with GSM and wireless local loop (WLL) overlay. WLL was also extended to cover Entebbe and Jinja. The fixed-line service was upgraded and expanded with the installation of a new fixed-line switch, providing increased capacity and IN-based services. MTN Uganda's transmission network consists of both fibre-optic cable and SDH microwave links.

MTN's ARPU in Uganda is decreasing, and was US\$22 per month in 2004.

In 2004, MTN Uganda launched **pre-paid fixed-line service**, the MTN Business Solution Centre concept to better address the corporate market.

Uganda Telecoms Ltd (UTL)

MTN's main competitor is quite different - still looking and operating like a government department. Before privatisation UTL ran three rural telecentres to provide internet and other information to rural communities, but they were very expensive to establish (c \$60,000 each), and difficult to sustain. Since privatisation, UTL has focussed on expanding its fixed and mobile phone network to cover every District except in the far north of the country. UTL has established a mobile phone franchise, Mango, which has fewer subscribers than MTN but is growing fast.

UTL On-line runs the county's only **internet gateway** and leases access to other providers.

ANNEX 12: CALCULATING MAXIMUM LEVEL OF SUBSIDY IN UGANDA*(Based on UCC, 2004, p. 40 and p. 41)*

| REVENUE ESTIMATES | | COST ESTIMATES |
|--------------------------|---|---|
| p | Population of the administrative units under analysis | This needs to take into account current infrastructure (e.g. backbone) and possible regulatory restrictions to use certain technologies ⁵⁹ . Should be based on an investigation of specific local cost issues (e.g. security, transportation, local taxes, cost of alternative power supply) ⁶⁰ |
| i | Local/rural per capita GDP | |
| e | An expenditure or affordability factor, which is the % of income spent on telecommunications (2-5% can be taken initially and revised later, after a demand survey) | |
| d | “access distance factor”: the proportion of rural population (or revenue potential) which will realistically be reached by public pay telephones. Estimations for this factor can be made from a consideration of the average travelling distance for users e.g. halfway between the extremity of the area and the central trading centre where the telephone will be located. The relationship is “inverse”, such as $1/dx$, 14 where x is less than 1 and d is the average walking distance. | |
| n | No. of payphones, based on a population figure to be the desired UA target (e.g. one per 5,000 people) A square root relationship is used between achievable revenue and the number of payphones, reflecting the fact that the proportion of revenue captured by the first telephone is larger than subsequent ones. | |

The potential revenue projection from payphones can thus be estimated as follows:

$$R = p \times i \times e \times 1/d \times 0.8$$

⁵⁹ Dymond and Oestmann, 2003.

⁶⁰ Dymond and Oestmann, 2003.

ANNEX 13: OPERATOR REVENUE AND COST DETERMINANTS IN RURAL AREAS

(Source: Adapted from Sepúlveda, 2004)

Table 8: Advantages and disadvantages associated with regulating tariffs and interconnection

| | Advantages | Disadvantages |
|---|---|---|
| Do NOT regulate | Less subsidies are required | Possible abuse of de facto monopoly: may charge excessive tariffs |
| Regulate BEFORE minimum-subsidy auction | Certainty for operator (minimises risk: operator can estimate revenues) | Requires detailed cost information |
| Regulate AFTER minimum-subsidy auction | | Increases level of risk for operator who cannot estimate revenues; thus increasing required subsidy level Risk of no bids or operator abandoning project |

In rural areas, the main operator revenue determinants are less than the main operator cost determinants.

UAF subsidy + Consumer tariffs⁶¹ + Net interconnection charges⁶² = Cost of network⁶³ + profit margin

Consumer tariffs can be broken down into:

- Local tariffs
- Intra-regional tariffs
- Domestic tariffs
- International tariffs

Interconnection charges include:

- Interconnection Charges Payable to the Incumbent by the Licensee
- Interconnection Charges Payable to the Licensee by the Incumbent

Regulating the level of tariffs and interconnection prices

| | |
|---|---|
| MINIMUM level of user tariffs and interconnection charges | at the end of the subsidy period, the operator is financially viable (and can continue to provide the designated mandatory services) |
| MAXIMUM level of user tariffs and interconnection charges | designated mandatory services stays affordable to a significant majority of the population that receives services (rural populations can afford to spend 1-5% of income on communications) |

Between these, the selected level of consumer tariffs and interconnection charges will be reflected directly in differences in the amount of subsidy requested by potential operators.

⁶¹ (e.g. for a phone booth the prices per call).

⁶² Net amount paid by e.g. urban network to rural network.

⁶³ network installation and operation.

GLOSSARY, ACRONYMS AND ABBREVIATIONS

GLOSSARY:

(From ITU BDT 1998 World Telecommunication Development Report):

UNIVERSAL ACCESS: reasonable access to telecommunications for all, including universal service for those who can afford the individual telephone service and the installation of public telephones within a reasonable distance for the rest of the population.

UNIVERSAL SERVICE: availability, non-discriminatory access and general affordability of the telephone service, the level of universal service being statistically measured in terms of the percentage of households with a telephone.

ACCESSIBILITY: (in the broad sense) universal service principle under which no telephone service subscriber is to be discriminated against in terms of price, service or quality for reasons of geographical location, race, sex, religion, etc.

AFFORDABILITY: universal service principle whereby telephone service charges are set at a level that most citizens can afford.

AVAILABILITY: universal service principle whereby telephone service coverage is provided nationwide, wherever and whenever required.

Interconnection:

BROADBAND: Although there exist various definitions of broadband that have assigned a minimum data rate to the term, it may be defined as transmission capacity with sufficient bandwidth to permit combined provision of voice, data and video. For practical purposes, broadband is used in this report to refer to either DSL, cable modem or high-speed fixed wireless services.

CONNECTIVITY: The capability to provide, to end users, connections to the Internet or other communications networks.

COVERAGE: Refers to the range of a mobile cellular network, measured in terms of geographic coverage (the percentage of the territorial area covered by mobile cellular) or population coverage (the percentage of the population within range of a mobile cellular network).

INTERCONNECTION: The physical connection of separate telephone networks to allow users of those networks to communicate with each other. Interconnection ensures interoperability of services and increases end users choice of network operators and service providers.

INTERCONNECTION CHARGE: The charge, typically including a per minute fee, that network operators levy on one another to provide interconnection.

ACRONYMS:

UA: universal access

US: universal service

UAF: universal access fund

USF: universal service fund

WLL: wireless local loop

ABBREVIATIONS:

UCC: Uganda Communication Commission

UTL : Uganda Telecom Limited

WTO: World Trade Organisation

RFPQ: Request for Applications to Pre-Qualify

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