Rural Telecommunications Development in a Liberalising Environment: An Update on Universal Access Funds

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One prominent mechanism for mobilizing investment into challenging rural areas is the universal access fund or rural telecommunications development fund model. These funds offer subsidies and licenses, under a single competitive bidding process, to operators wishing to serve designated areas or communities selected by Government. The funds initially focused on creating and supporting telephone service licenses to provide payphones in challenging areas, but now some also offer subsidies for Internet access and advanced ICT projects. Since the first fund was established in the mid-1990's, approximately 20,000 communities have received telephone service for the first time through fund mechanisms in five countries, and many more thousands will follow in the dozen or so countries that are now beginning to implement such mechanisms. This note provides an update on the experience gained by these funds and their licensees, and the actual record of achievements in the countries that have implemented these programs. The experience is reviewed from two perspectives: first, whether government targets to serve remote and low-income communities are being achieved; and second, whether the funds have been effective in catalyzing market-oriented and commercially sustainable service provision in the long run.

Bridging the Access Gap: Defining the target market

Universal Access is the goal adopted by many developing countries to provide convenient and affordable access to communications, at least on a community basis, through a combination of private and public access facilities such as payphones and telecentres[1]. A liberalizing market needs universal access policies and mechanisms to ensure that communications and information services reach all segments of society, including the urban poor and rural communities. The strategy can be envisaged as focusing on two separate 'gaps', addressed with quite different mechanisms:

- *The market efficiency gap* is the difference between what markets actually achieve under current conditions, and what they can achieve if market barriers are removed. This gap can be bridged through effective competition, private provision of service, and market-oriented policies and regulations that create a level playing field for new entrants.
- *The access gap* – refers to the people and places which remain beyond the limits of the market unless additional investments are mobilized through intervention, in the form of subsidies to encourage service providers to enter[2].

The Universal Access Fund, sometimes called a Telecommunications Development Fund or something similar, is a mechanism focused on the access gap – i.e. extending the market into marginal areas. This note considers how well the funds with some years of experience are meeting that objective.

Universal access funds focused on rural areas

A few OECD countries have had forms of special finance – revenue pools and asymmetrical interconnection charges - to subsidize high cost rural areas. However, the idea of making finance available *competitively* under a reverse auction (lowest subsidy demanded wins) and generating new licenses for rural operators has only existed since 1994, with the establishment of Chile's Fondo de Desarrollo de las Telecomunicaciones.[3] Five countries have to date actually licensed rural operators through such funds, as summarized in the following table. Several others in Latin America[4] are about to commence operation or are planning to do so. In Asia and Africa, two countries – Nepal and Uganda – are currently implementing schemes and a handful of others are following in their footsteps. A fund in South Africa, administered by the Universal Service Agency, is on a smaller scale and provides finance to community telecentres only.

[1] Universal Access is in contrast to Universal Service, which is the objective of making facilities available to every household.
[2] The conceptual framework of the two gaps is developed in the World Bank Discussion Paper No. 432, *Telecommunications & Information Services for the Poor: Toward a Strategy for Universal Access*, Juan Navas-Sabater, Andrew Dymond, Niina Juntunen.
[3] See for a detailed review Bjoern Wellenius, *Chile:* Closing the Gap in Access to Rural Communications: Chile 1995-2002, Nov 2001
[4] Argentina, Brazil, Bolivia, Ecuador and Nicaragua

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

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

As the table shows, funds receive their finance from sources such as direct Government contribution, a levy on operators, or radio license fees. It can be seen that on average, the amount of subsidy actually bid and granted has been less than half the maximum offered by the funds. However, the averages hide a wide range of experiences, from zero subsidies in some of the early Chilean competitions to 100% of the offered amount in later rounds.

The successes appear to be due to a combination of careful fund design and supportive regulation. On the other hand, as with any innovation, not all of the potential problem areas could be anticipated or fully addressed in advance. Some of the challenges have arisen largely due to international market factors and issues or failures encountered by licensees that, while beyond the control of governments and regulators, must also be taken into account in future design.

Key success factors for the early funds

Most of the funds have broadly achieved the access targets set by Government. Whereas a detailed evaluation report has been prepared on the Chilean case[5], various sources have been used to assess the experience in the other countries.

- ***Competitive mechanism*** – All funds have used a minimum subsidy bidding mechanism that was well understood and that successfully exploited the competitive spirit of the bidders. The bidders have included incumbents wishing to secure territory and new entrants wishing to gain a foothold in the market place.

[5] The report *Closing the gap in Access to Rural Communication: Chile 1005-2002*, Björn Wellenius, November 2001 has been quoted freely, while other material about other countries is interspersed.

- ***Multiple licensing*** - In Chile, Peru, Colombia and Guatemala, the division of license territories into regions and areas and the opportunity to bid for multiple licenses allowed bidders to assemble territorial blocks according to corporate interests. While resulting in some considerable variation in the level of competition from case to case, this provided an opportunity for some entrants to assemble major national holdings through aggressive pricing of their bids.
- ***One-stop process*** – The bids have typically offered the opportunity to obtain operating licenses, a capital subsidy and radio frequency licenses, allowing operators to reduce time, paperwork and costs associated with regulation. This is especially attractive to new entrants.
- ***Attractive licenses*** – Bidders for many of the rural payphone licenses were allowed to also serve other business and residential customers and to propose unregulated services that were added to their licenses and contribute to commercial viability. One operator in Chile that won licenses requiring 1,800 payphones has built an extensive regional network with 18,000 lines.
- ***Supplier market interests*** – The majority of successful bidders in Chile, Peru, Colombia and Guatemala have been either directly owned by or allied to suppliers of rural telecom technology, e.g. VSATs or multi-access wireless, who have seen the licenses as major opportunities for themselves. This has also raised issues however, discussed in the next section.
- ***Good regulatory design and interconnection*** – A sound regulatory environment enables the subsidies to be 'smart' in the sense of their assisting with early start-up of profitable ventures. This is exemplified by the Chilean case, which allows operators to charge higher tariffs (up to a regulated limit) & provides cost-related asymmetric interconnection rates. The interconnection regime gives rural operators access charges that are several times higher than those of urban operators. This creates significant revenues from incoming call traffic and the incentive to exploit demand for incoming calls. As an example of the impact 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.
- ***Demand study and clear targets*** - Use of good market research and demand analysis in the fund establishment process provided helpful assistance to bidders. Most countries provided quite comprehensive data to bidders – in Chile, even specific site locations for payphones were identified by local authorities, community associations, other organizations and the public at large.

Challenges and risks, and how to mitigate them

Success in securing licensees has not necessarily always led to healthy operations and some market factors transpire to render at least some operators unable to reach their hoped-for potential, to provide good service or reach their targets. Some of the issues surfacing

demonstrate that political or international market developments can influence outcomes irrespective of how well the fund or the regulatory regime is designed. However, the benefit of experience provides an opportunity to consider options for improving the fund process or for bringing additional strategic resources into the arena, to create a greater robustness.

- ***Sustaining competition*** – Companies' appetite for aggressive bidding to secure licenses is related to their strategic objectives. It appears stronger during the initial phases when companies are positioning themselves, but declines when the market has stabilized. In one case, a successful bidder accepted zero subsidies in order to get a foothold, develop its targeted territory and secure long term control of radio frequencies. Once initial objectives are realized or the potential for new competitive entry declines, company motivation for low bidding can diminish. This risk can be reduced, but not necessarily eliminated altogether, by fund managers considering competitive market interests in the design and packaging of license territories. This means that they should assess the apparent commercial interests of the players likely to bid, and package the license areas in such a way as to maximise the number of communities that will be included with strategically attractive territories.
- ***The problem of the most marginal localities*** – Some license territories, irrespective of strategic interests, are *much less viable* than territories containing broad opportunities for service growth and diversification or wider technology choice. This is seen especially in some of the areas won by VSAT-based operators. The remoter sites in Chile appear to have suffered more from this problem than cases with better economies of scale. Mitigation of this risk for future fund implementations perhaps lies with mixing attractive with less-attractive service areas, offering larger license areas to ensure economy of scale, or perhaps even applying a higher, second level of interconnect access charge to reflect the costs of the more remote communities. Whereas the ideal formula will vary from country to country, there is no doubt that here again careful license packaging is a crucial issue. It could be that ultimately, some funds having to deal with extremely high-cost areas may have to consider operational as well as capital subsidies, to secure long term operator viability.
- ***Consequences of low-bidding*** - In some cases, it appears that a few companies risked their financial health by low-bidding to gain market position. A feature of the Chile, Peru and Colombia competitions is that many winning bids were very aggressive. Peru's 1999 competition was won by a company bidding only 20% of the available subsidy. Combined with subsequent political and international market developments, it appears that this led to the company being unable to meet its roll-out targets. This type of hazard could perhaps have been addressed by demanding a higher performance guarantee, or by subjecting winning bids to a more rigorous due diligence process before subsidy approval.
- ***Operational experience of bidders*** – In most cases, rural license opportunities have not attracted large international operators, except sometimes from incumbents, though often they have been unsuccessful bidders. Whereas incumbents in Chile and Dominican Republic have won bids, the dominant bidders in Peru, Colombia, Guatemala and Chile, have been relatively inexperienced and newly formed operators, associated with or owned by technology suppliers. The main motivation of suppliers is clearly to secure markets for their products. Although some subsequent struggles can be attributed to worsening market conditions, it

also appears that their understanding of customer service and marketing was less than total. This has led to sub-optimal market performance and service provision in some cases, or to lack of confidence in the market. More stringent pre-qualification rules would limit risk to some extent, and the introduction of more rigorous due diligence prior to concluding license agreements could also address this problem. The involvement of a major financial player (e.g. a development bank or consortium), backing the fund with the capacity to injecting finance, but with the requirement for minimum qualifying standards from the winning bidder, would be preferable to a due diligence by the fund administration itself.

The impact of mobile communications

Mobile communications is extending the limits of the market place and reaching out into areas unserved by the fixed network, often at lower cost. Some funds will find that they can target some areas with lower subsidies *and* lower risks. The mobile explosion will also mean that some funds can focus almost exclusively on the most remote geographical localities.[6]

The case of Uganda illustrates this. The vast majority of the country will soon be covered by mobile and fixed-wireless service for basic access, leaving only 154 sub-counties out of 1,000 uncovered; the Rural Communications Development Fund (RCDF) will focus on supporting access to these sub-counties. However, it is expected that mobile operators will be able to serve many of these areas with minimal or zero RCDF support by the time the first tender is made, leaving less than 100 remote high-cost communities to be served. This will be an increasing trend in developing countries with medium to high population densities.

The active presence of mobile operators in rural areas could also offer development funds new opportunities to deepen their role through micro subsidies. For example, Uganda's RCDF will support small grants or micro-loans to enable entrepreneurs wishing to set up public payphones in areas with weak wireless signals or with no power source to acquire special rural packages[7].

Moving on to Internet, advanced ICT services and telecentres

The attention of several funds includes extending Internet access and advanced services, either as the next objective after telephony targets have been met or as a complementary goal. Three funds have implemented Internet access or telecentre/ infocentre programs so far: in Latin America the Colombian and Chilean programs, and the Universal Service Agency (USA) in South Africa. A few other funds are planning to include support for Internet points-of-presence or telecentres (e.g. Uganda, Dominican Republic, Bolivia), while the Dominican Republic includes telemedicine projects in its portfolio. Peru's FITEL is also financing pilot projects involving the Internet.

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[6] The role of mobile communications in universal access is covered in much greater depth in Sonja Oestmann, "*Mobile operators: their contribution to universal service and public access", Jan 2003*

[7] A rural package, costing approximately $500, comprises a desk-top fixed GSM handset, simple rooftop pole and antenna, and personal sized solar panel. Management of the disbursements in the micro program may be outsourced to a micro-finance agency.

Lessons thus far are drawn mainly from South Africa's USA, which has implemented telecentres from as early as 1998, while promising ideas are emerging from Chile's and Colombia's program, which has commenced very recently.[8] Various sources agree that none of the 90 or so South African telecentres are self-sustaining after the initial funding and many have already closed. Even the best cases, e.g. Gaseleka[9], have declining profits and no way of covering equipment depreciation. This is similar to telecentres unrelated to funds. However, well-managed telecentres with a variety of ICT enabled value-added services could be of tremendous benefit to rural and low-income communities. That is why the interest is justified.

Latest thinking is that telecentres need to be commercial, mostly small scale and led by entrepreneurs in order to ensure sustainability and proliferation. This is because developing countries simply do not have sufficient resources to support a large number on an ongoing basis. However, to date very few projects have been set-up on a commercial basis; for example, South Africa's telecentres are sponsored by community based civil organizations and NGOs. *Colombia is the first fund to successfully implement a competitive bidding scheme for private operators, allowing economies of scale by bidding telecentres in the hundreds. This will facilitate telecentres to be run by local entrepreneurs in the community but with the support of a network and management organization*[10].

Taking the balance of experience thus far, it is clear that policy-makers can support Internet and ICT based service development in a variety of ways, but need to take a step-by-step approach that focuses more on the supporting environment than direct finance. It is important not to distort a just-emerging market, and funding should be limited to the minimum required. The following are the measures needed and it should be noted that only two involve direct financial support.

Internet and ICT service support mechanisms

- Start with removing any barriers to the development of the Internet and ICT services market, such as allowing IP Telephony, nation-wide local call tariffs for Internet dial-up, easy licensing for ISPs, access to (international) bandwidth and promoting national IXP exchanges, etc.;
- Develop public services online (e-government, tele-health, tele-education etc.) to stimulate demand in telecentres;
- Offer subsidies for Internet infrastructure first, e.g. small subsidies to establish Points of Presence (POPs) in every rural district, as planned by the Ugandan fund;
- Promotion and awareness creation of telecentres through conferences, workshops and training opportunities;

[8] In late 1999 GVT (Gilat Satellite Networks) won the first Compartel phase to install 6,745 payphones and 670 Internet access points which they completed at the end of 2001. Phase 2 was declared void and in April 2002 Compartel received a sole bid from Gilat for Phase 3 to install 500 community telecentres in a pre-qualification bid. The results are expected end of June 2002. At end of 2001 Chile awarded subsidies for 55 urban infocentros designed to assist SMEs. A tender for over 100 rural telecentres is underway and proposal opening is scheduled for September 2002.

[9] See The Gaseleka Telecentre, Northern Province , South Africa, Peter Benjamin, in Commonwealth of Learning, *Telecentres: Case studies and key issues*, 2001

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

- Only where the market does not reach commercially, offer support to telecentre start-ups through competitive bidding procedures, following the successful principle and practice of the rural telephony funds; and
- Develop guidelines and requirements that improve the prospects that commercially run telecentres can fulfil the function of assisting rural and low-income communities in their social and economic development.

Summary and conclusion – lessons for policy makers and ways forward

The experience of the funds confirms the role of subsidies as well as competitive market mechanisms in enlisting the participation of private operators to serve marginal areas. Overall the experience is encouraging, but it also shows rural telecommunications to be largely a market with relatively young operators accepting considerable risk. Prospective rural operators face challenging situations as well as capital scarcity. They are playing an important developmental role in a context that can be commercially viable under the right circumstances, but their position is often precarious even with the contribution of subsidies. Furthermore, the difficulty of raising finance in a declining market over the last few years has compounded any miscalculations made during the bidding process.

Sound regulatory measures, such as asymmetric interconnection reflecting the higher costs of rural operators can reduce risks and subsidy requirements and put ongoing operations on a sounder basis. Also, the rapid growth of mobile communications is reducing the geographical extent of the areas that remain beyond the market. But policy-makers need to place creative attention on the special needs of operators wanting to serve remoter and more challenging localities.

Three areas need attention to ensure continued progress on rural telephony licenses and successful adaptation to the needs of rural Internet development.

- ***Participation of major financial players*** **-** As discussed, there are times when bidders could benefit from more business planning rigour and due diligence. One possible means of injecting this would be through the participation of senior financial partners who would bring both additional resources and discipline. Rural operator representatives have indicated that they would welcome equity participation, limited recourse debt and other support from major players[11]. Thus the active participation of major financial players could provide the stability and long term viability this market needs. One important mechanism suggested in the World Bank Group publication already referenced[12], but which is still waiting to be fleshed out, would be for major financial institutions to put together a support mechanism in the form of a

[11] *Telecommunications and Information Services for the Poor: Toward a Strategy for Universal Access,* World Bank Discussion Paper No. 432, Navas-Sabater, Dymond, Juntunen,
[12] Discussion Paper 432

debt and equity partnership option for winning bidders of fund competitions. This would create an incentive for more careful bidding.

- ***Long term sustainability of the least viable localities*** – As the expansion of mobile and other wireless services reduces the need for fund subsidies over wide geographical areas, some funds will need to subsidise only the most remote and least viable sites. A clearer division is thus emerging between the market's reach, as a result market liberalisation, and the remaining 'access gap' which still needs intervention and subsidy. Whereas this seems beneficial, fewer sites will mean less opportunity for economies of scale and also increase the need for creative solutions to ensure long-term sustainability of services. This could possibly warrant even higher interconnection charges, the use of operating as well as capital subsidies, or other forms of incentive.
- ***Finding the right blend for Internet and advanced services*** – In view of the embryonic nature of the rural Internet market, funds should be used carefully for advanced ICT services. There is first of all a need for policies that will support market growth (just like for telephony), and these should be advanced and monitored by fund administrators before committing financial involvement. Fund disbursements should focus initially on supporting Internet access (points-of-presence) while promoting relevant applications and content development. Then they should use similar minimum subsidy principles as for telephony funding, though much smaller in scale, to ensure sustainability for telecentre and advanced ICT service projects.

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