

Rural Access to ICTs in Southern Africa

J. Riley Allen

1. Introduction

Despite decade-long progress in sector liberalization and the expansion of mobile wireless communications, a wide gap in telecommunications access persists between urban areas and the generally poorer rural regions of developing nations in Africa. Rural populations not only remain relatively isolated but cannot enjoy the many economic benefits available worldwide by applying information and communication technology (ICT) for development.

Namibia, like the rest of the Southern Africa region, is facing major challenges in attempts to deliver communications services and ITC to rural populations. Namibia is poor and sparsely populated. Population density overall is among the lowest in Southern Africa. Fixed-line services remains in the hands of a state owned monopoly. The cost-of-service remains prohibitively high to most where service is available. Adding to the dilemma, rural service is hampered by such fundamental issues as lack of electricity, language barriers, and lack of technical skills to own and manage communications and computer technologies.

The Government of Namibia with the support of the United States Agency for International Development held a workshop covering the issue of rural access to information and communication technologies (ICTs) on February 11-13, 2003 in Windhoek, Namibia (the Namibian Rural Access Workshop or NRAW). Building on the successes and failures from around the world and opportunities created by advanced technologies, the NRAW identified the key elements necessary for providing affordable communications and ICT to rural areas in ways that capture the opportunities presented by emerging technologies.

While Namibia policy makers and the regulator, who would be charged with implementation, are the primary audience for the event, the issues are broad and relevant to any of its neighbors, or indeed to any developing country planning or reviewing plans for universal service and access.¹ South Africa features prominently in the discussions for examples and context because it has, historically, lead the region in policy reform efforts, and provides a base of regional experience from which to build.

This paper presents opportunities and challenges identified at the NRAW. The paper also references materials relevant to the subject matter only available subsequent to the NRAW. The paper begins by discussing the regional situation and regional work on universal service and access initiatives, largely from South Africa. The paper continues on to discuss technologies opportunities, primarily from wireless technologies, that can

¹ For purposes of this discussion “universal service” refers to service into the household and “universal access” refers to the availability of a phone in close proximity to home.

help bridge gaps of service and affordability for countries such as Namibia. Wireless technologies are uniquely suited to developing world environments such as exists in Namibia and most of Southern Africa. Already over the space of the last decade, wireless technologies, especially cellular technology has helped transform the communications landscape in Namibia and, indeed, the entire Southern Africa Region.

A discussion of foundation issues of policy and regulation follow. In broad terms, policy and regulatory environment provide the foundation necessary for quick adoption of emerging technologies, primarily by harnessing effective competition. Namibia, as with most of the region has, focused past energies on the using the incumbent government-owned monopoly for delivering rural service. As a region, a framework for pursuit of universal service and access was established that leverages the monopoly through licensing arrangements and exclusivity. The framework has proven a disappointment and, with respect to fixed-line and advanced services, the region remains the poorest performer in the world for most communications services. The policy framework advanced below building on a competition stands in contrast..

Competition and open entry alone, however, will not deliver even voice service, let alone advanced services to remote areas and communities. Some form of subsidy will be required. The establishment of effective support through efficient subsidy mechanism will be required in some areas. There is now considerable experience, both positive and negative to be gleaned from international experience in establishing effective subsidies and applying them efficiently. The experience of South Africa in this area is an invaluable point of reference for reasons discussed below.

The final section discusses the need to bring advanced services and capabilities to rural communities. Experiments to bring simple voice services have delivered some successes. However, the establishment of sustainable ICT telecentres is proving more elusive.

2. A Persistent Gap in Service and Affordability

In Southern Africa, teledensity remains low and service areas coverage is expanding rapidly via wireless technologies. At the regional level, fixed-line teledensity remains at roughly 3 percent. Mobile service has been the real success story and teledensity is now more than double fixed-line teledensity at 6.5 percent. Teledensity, is, however, extremely variable in the region, with the wealthier nations of Mauritius, Seychelles, and South Africa represented at high end and Malawi, DRC, and Angola at the other. In all cases in 2001, except for Namibia and Mauritius, mobile teledensity exceeded fixed-line teledensity in 2001 and, given its rapid growth, surely does so in all countries today.²

Table 1 provides details on the status of service as represented by averaged teledensity for each of the SADC countries.

² According to the most recent available data from ITU as of June 2003, Mauritius and South Africa have mobile teledensity of each is 26 and 21 percent respectively in 2001. Malawi, DRC, and Angola have mobile teledensities of 0.6, 0.3 and 0.5 respectively for 2001. In all cases, except for Namibia and Mauritius, mobile teledensity exceeds fixed-line teledensity. See, <http://www.itu.int/ITU-D/>.

Table 1
SADC Teledensity³

Country	Fixed-Line Teledensity (2001)	Mobile Teledensity (2001)
Angola	0.59	0.64
Botswana	9.27	16.65
DRC	0.04	0.29
Lesotho	1.03	1.53
Malawi	0.47	0.48
Mauritius	25.56	25.00
Mozambique	0.44	0.84
Namibia	6.57	5.59
Seychelles	26.73	55.15
South Africa	11.35	21.00
Swaziland	3.14	6.47
Tanzania	0.41	1.19
Zambia	0.80	0.92
Zimbabwe	1.86	2.41

The issue of affordability looms large in the region. The Southern African region, especially that of Botswana, Namibia, and South Africa now enjoys coverage over the vast majority of the population through the introduction of cellular. Cellular usage rates, however, remain relatively high and fixed-line service includes installation and monthly costs that are proving prohibitively expensive.

Due to the rapid growth of cellular and coming widespread availability of broadband satellite, the gap may be viewed increasingly as a gap due to issues of affordability rather than availability.⁴

In certain countries in the region, including Botswana and South Africa, access and affordability have increased significantly through the establishment of small one-person phone shops set up road-side or in market areas.

³ Source: ITU, June 2003.

⁴ In addition to the now considerable footprint of cellular in countries like Namibia, South Africa, and Botswana, Sentech in South Africa is offering an “always-on” 24/7 broadband service in South Africa.

3. Regional Policy Efforts to Address Universal Service and Access

Most of the region is fairly new to formal initiatives advancing universal service and access. The Telecommunications Regulator's Association of Southern Africa (TRASA) only recently established a new policy framework for the region to cover these issues. Elements of that framework are increasingly found in policy statements and law. South Africa, however, moved early to address the issue of rural access in conjunction with broader efforts to privatize its fixed-line operator.

South Africa provides helpful policy performance benchmarks for its neighbors on issues of universal service and access. The linkages between South Africa and Namibia are strongest, as Namibia was a part of South Africa until 1990. The size of its economic dwarfs its neighbors and translates into considerable economic influence in the region. South Africa's leadership on telecommunications issues looms large throughout the region because it forged new policy approaches. It has some stunning successes to share (largely cellular) and some hard lessons associated with establishment subsidy schemes connected to licensing commitments, privatization, and exclusivity.

The success of cellular service in South Africa is covered below in Section 4. In brief, the reach of cellular service now exceeds original projections, and build-out obligations by a considerable margin.⁵

The success of cellular, however, stands in sharp contrast to experience with fixed-line networks and subsidies outlined in the recent ly.⁶ The problems also extend to their approach to the establishment of a universal service fund ("USF") and its administration through a Universal Service Agency ("USA" or "Agency").

License Obligations

In 1997, South Africa privatized a minority share (30%) of its fixed-line operator. In conjunction with the privatization, the government awarded a license to Telkom, the incumbent operator, granting certain concessions (e.g., 5 year exclusivity) and included certain rollout obligations. Table 2 summarizes the obligations of Telkom.⁷ In broad terms, Telkom would be required to build 2.81 million lines over a five year period of exclusivity. At the time South Africa had only 4.6 million lines in service. It was especially challenging when one considers that the requirement included provision for 2/3s of the lines to be installed into rural areas. The expectation at the time was that Telkom and South Africa would roughly double fixed-line teledensity levels over the period from roughly 10.6 in 1996 to roughly 20 by May of 2002.

⁵ The two major cellular companies in South Africa were awarded licenses in 1993 and started service early in 1994.

⁶ Hodge, 2003

⁷ The cellular companies also had rollout commitments to reach 70% of the population within the first 4 years, but easily met and exceeded that level by extending service coverage to an area accessible by 92% of the population.

Table 2

License Obligations of Major Operators in South Africa

	Rollout Obligation	Community Service
Telkom (fixed-line)	2.69 million lines (2.68 in underserved areas) (20,246 for priority customers) (3204 villages)	120,000 payphones
MTN (cellular)	60% population coverage in 2 years and 70% in 4 years	7500 community service phones in underserved areas
Vodacom (cellular)	60% population coverage in 2 years and 70% in 4 years	22,000 community service telephones in under serviced areas

Source: Hodge 2003

What transpired over the period, however, was considerably different. Telkom fulfilled its build-out commitments. However, demand for service lagged projections. The fixed-line operator disconnected the vast majority of newly connected residential customers for non-payment. Despite a rollout of some 2.67 million lines, Telkom only experienced the addition of some 667 thousand lines between 1997 and 2002. Hodge estimates the total deadweight loss from the policy to be roughly 17 billion Rand (roughly 2.3 billion US\$).⁸ In a country with a population of 45 million, this was a considerable loss.

The disconnections testify to the failure of models used in the original analysis to accurately predict changing market and demand conditions. Consumers began substituting cellular for fixed, and consumer demand declined with the concurrent rate increases associated with rate rebalancing. The broader lesson, however, was that inflexible rollout obligations should not be established in a dynamic environment with all the associated uncertainties as exists in telecommunications in the region.

Universal Service Agency

In parallel to the rollout obligations of Telkom, South Africa also pursued universal access policy through the establishment of a Universal Service Agency. The charge of the USA was to administer its universal service fund and to set goals for uses of the fund. The USA and the fund itself were fairly unique in that the USA and the fund were largely separate from the regulator. The regulator had responsibility for monitoring the Agency, and also in proposing the fee levels to support the Agency, but had little direct responsibility beyond.

⁸ Hodge, 2003

The USA was originally funded by the fixed-line operator, Telkom, and the cellular operators.

The USA was set up to administer the fund to assist needy persons and to assist needy persons toward the cost of access and to assist the operators with their rollout obligations. As now seems widely recognized, however, there appears to have been a broad “agency failure.” The Agency failed to deliver on its obligation to establish service targets and to establish a strategy for delivery. The precise reasons for the failure, however, remain unclear.⁹

Despite its broad mandate, the Agency focused its energies on the establishment of a universal access program and telecentres. The Agency initially established ambitious targets for itself that ultimately prove unsuccessful. Of the hundreds of centers targeted, only 34 were operational by 2000 and many of these centers were unsuccessful. The reasons for the failures will be explored further below. In broad terms, however, the Agency failure resembled that of the licensing failures of Telkom; that is, the Agency miscalculated demand and costs that jeopardized sustainability.¹⁰

4. Opportunities Presented by Emerging Technologies

Wireless technologies are changing the communications landscape in the Southern Africa region. Cellular service presents one of the few successes in the region following the initial period of open entry, privatization, and competition. GSM service was first introduced in the region in 1994, and, for most countries, not until late '97 and '98. Yet, in probably every country in the Southern Africa region, cellular service is now greater than fixed-line service and still growing at double-digit rates. In two of Namibia's neighbors, Botswana and South Africa, cellular subscribership is approaching three times that of the fixed-line network, despite its short history.

The growth and success that wireless technologies enjoy in Africa is not entirely surprising. Underutilized spectrum tends to be more abundant in developing countries (especially in rural areas). Additionally, technological advances based upon greatly increased processing power in the base stations and subscriber equipment are able to overcome and even take advantage of channel impairments.¹¹ Finally, the growth in wireless equipment volumes continues to produce significant economies of scale, the disadvantages are becoming much less of a factor in developing countries as evidenced by rapid growth of wireless in countries that have established appropriate regulations and policies. The technological challenges and costs can – and are – being further reduced in fixed and low mobility applications.

Angola recently issued 4 licenses to new fixed-line competitors. Fixed-wireless technologies are expected to predominate in the delivery. Cellular is finally rapidly expanding in Angola with the end of the war. In South Africa, cellular for just one of its

⁹ Hodge 2003

¹⁰ Id.

¹¹ Hatfield, NRAW, 2003 (1)

three cellular operators already reaches at least 93% of the population. The incumbent is permitted to use both fixed-wireless and “fixed mobile” service as an alternative fixed line service. Given the sparse population of many areas, unlicensed frequencies appear to provide a green field for ISPs ready to provide service, as is done in Malawi. Sentech, who provides satellite and gateway services in South Africa, is now offering 24/7 high speed satellite-based internet access services.

The 2.4 Ghz ISM bands appear to be gaining popularity among ISPs in delivering high speed internet access. ISPs report city-wide coverage of internet access in Blantyre, Malawi using the ISM frequencies on an unlicensed basis.

5. Creating a Supporting Policy Framework

The entire Southern Africa region has been struggled with reform. Most of the region has simply been paralyzed by inaction as governments ponder ways to gild the otherwise the otherwise questionable investment opportunities associated with their own fixed-line operators. Only 5 of 14 countries in the region have privatized a portion of the fixed-line operator.¹² The last to privatize was Lesotho in 2001. Promising additional years of exclusivity almost always figures in the balance, but even this promise cannot attract much interest in such investments amid a bleak investment climate within the sector.

In all countries in SADC, major licenses, including cellular licenses, are issued one at a time and, almost always, after prolonged “beauty contests” that often lead to subsequent delays and become focal points for litigation and further delay.¹³ In most countries in the region, only the incumbent operator is permitted IP service provision of voice communications. In others, like Zimbabwe, VoIP is permitted, only if the competing service providers pay heavy license fees that are not imposed on the incumbent.

Namibia has long struggled to reform the telecommunications sector. Namibia made significant strides in 1999 by establishing a policy framework in line with world standards. Namibia, however, failed to follow-through in establishing a legal framework adopting the policy. Legislation necessary to provide for major elements of traditional sector reform, including privatization, independent regulation, and liberalization have been stranded somewhere in government for the last 4 years.

By any measure, competitive environments typically perform better than environments where existing operators remain state owned or closed. The evidence is well documented for developed economies like the UK.¹⁴ Even in developing economies, competition is contributing to rapid growth in fixed-line services, even while cellular is emerging as the

¹² The Seychelles fixed-line network has been owned by Cable and Wireless, Ltd, and was never a government owned entity.

¹³ South Africa is experiencing yet another delay in the introduction of a second fixed-line operator. In August, the regulator, ICASA, declared neither proposed licensee fit to meet their obligations under the license. Namibia and Mozambique similarly struggled with the introduction of a second license for mobile cellular and then with the delivery phase of those licenses.

¹⁴ See, UK Department of Trade and Industry, 2001 and OECD, 2002.

dominant vehicle for voice communications. In South America, countries like Brazil and Chile have opened their markets early sector are experiencing growth considerably higher than its neighbors in the region that remain a monopoly.¹⁵

Open entry and competition stimulate growth, expansion, better service and lower prices. Indeed, the region formally adopted liberalization in 1998. Implementation has, however, been slow.

What has, however, remained less apparent is the role that competition and liberalization can play in providing widespread service and access. There is a growing body of evidence showing that liberalization brings with it greater access, even to the more remote rural communities, especially when combined with appropriate subsidies and supporting policy framework.

In most developing nations, harnessing competition for greater rural access requires a supportive framework and neutral oversight by an effective regulator. Even where competition cannot reach, the real test for whether it can or can't deliver will come through the establishing of a supporting and enabling environment.

Investors fundamentally seek a return on investment commensurate or greater than the associated risks. Risk factors considered by investors are non-sector specific risks and sector-specific risks.¹⁶ Among the more important sector-specific risks are those associated with sector regulation. Included among the important regulatory issues are the following:¹⁷

- Licensing - minimal licensing burdens and delay;
- Interconnection – ability to connect at any technically feasible point in the network at prices that are just, reasonable, and non-discriminatory;
- Constraints on Market Power and Anti-competitive Abuse – regulatory interventions to limit abuse of market power and constraints on service imposed by the incumbent operator;¹⁸
- Wholesale/Retail – available wholesale services/resale opportunities;

¹⁵ Hernandez Gallardo, Christian, April 2003.

¹⁶ Non-sector specific risks include exchange rate volatility, foreign exchange controls, and repatriation restrictions. Sector specific risks include regulatory factors, but also the role that government plays in the sector, including ownership and investment. *See*, Hatfield, NRAW, 2003(2)

¹⁷ Hatfield, NRAW, 2003(2)

¹⁸ The list of regulatory constraints is potentially long, but includes (1) outright prohibitions on incumbent service provision, (2) separate subsidiary requirements, (3) rules for ensuring “arms length” transactions, (4) tariff requirements (to help prevent rate discrimination and eliminate cross-subsidies), (5) accounting separations, (6) price cap regulation, (7) rules for imputation, (8) interconnection facilitation and regulation, (9) quality of service measurement and reporting, (10) resale requirements, and (11) unbundling requirements, among others. Hatfield, NRAW, 2003(2)

6. Subsidizing Rural Areas

While most economists shy from the overt subsidies, there seems to be relatively widespread support among politicians and even economists for subsidies in the telecommunications sector. Three reasons are usually given for promotion of subsidies in the sector.

First and foremost, communications in the 21st century is viewed as a fundamental right. And indeed most of the recent policy statements adopted in the sector at the regional and at the national level appear to embrace this fundamental right in advocating strategies for extending service to rural areas.

Second, there is the traditional “externalities” case for subsidies advanced by some economists. Here, the claim is made that the value of the network grows with subscribership. That is, the addition of each new subscriber to the overall network increases the value of that network to pre-existing subscribers. The value of those additions are *external* to the market transaction and therefore constitute a form of market failure or externality that may warrant a compensating form of subsidy. As such, subsidies to rural more costly merely correct a pre-existing market failure.

Third, communications, especially advanced communications available in the current and future market holds the potential for unleashing the considerable economic potential for developing economies. The value of communications sector to the broader economy and development may be greater than its value to individual subscribers, at least given their available purchasing power. Development goals can be advanced through greater coordination between service providers, between markets, and between suppliers and final consumers.¹⁹ Opportunities to advance longer term development goals associated with education and governance are also generally associated with gains in communications capabilities.

7. Creating Effective Subsidies and Strategies for Reaching Rural Areas

There are a variety of potentially appropriate forms of subsidies. As noted earlier, the primary ones currently used in the Southern African region suffer from a range of ailments. Experience allows us an opportunity to establish criteria for appropriate subsidy mechanisms. In broad terms, effective subsidies must be transparent and function well in a competitive environment. Examples of mechanisms that have been successfully used here include the following.

¹⁹ As an example, taxi drivers in Zanzibar report that they are able to double their daily return at lower costs due to cell phones. The effects that cell phones are having in improving markets and job opportunities in Zanzibar extend to a wide range of jobs including tradesmen, tourist guides, and market sellers. Opportunities for renting phones at discounted rates are creating business opportunities on the Island. Daniel Dickinson, “Zanzibar’s mobile revolution” BBC News, August 12, 2003.

a. Rural Access Fund (Universal Service Fund Model)

The universal Service Fund concept was first established in the US after the break up of the Bell Operating Companies to provide a competitively neutral system of subsidies to replace the internal system of cross subsidies that preceded it. Experience with such funds is now well established in the US and in certain developing regions of the world, like South America. South Africa also has some experience, albeit limited, with a Universal Service Fund.²⁰ The workshop provided an opportunity for sharing some of the lessons to be learned about the potential impact of such funds.

The Universal Service Fund in the US is now over \$6 billion and the framework has been adopted in roughly a dozen states in the US.²¹ Within the Southern Africa region, the tool has been broadly adopted by regulators in the region. The Telecommunication Regulators Association of Southern Africa adopted regulations for universal access and service embracing the establishment of a universal service fund. Virtually every piece of sector law established or proposed in Southern Africa includes provision for the establishment of a Universal Service or Rural Access fund.

As noted above, South Africa established a unique administrative agency completely separate from the regulator to oversee the funding. The agency has been criticized for inefficiencies and ineffective programs.

b. Bidding for Subsidies

Chile and Peru have used the Universal Service Fund to launch subsidies into rural areas. Licenses are awarded to providers that offer to deliver service at the lowest subsidy levels.

c. Rural Access Licenses/Cooperatives

Rural access licenses are another vehicle used to promote rural access. South Africa has already identified 39 areas. Malawi's policy calls for a similar framework. The approach here builds on the rural cooperative and small telecommunications operator environment in the US that was fostered through Federal loans.

The cooperative model played a major role in rural access in the US. In the US, as recently as the 1950 and 1960s, most rural Americans did not have access to a telephone. The large companies were simply unwilling to serve many rural areas in the US. Today, approximately 1200 rural telephone systems have been build covering 40% of the US

²⁰ As noted above, the South African approach included the establishment of a separate Universal Service Agency. While some information is available on the success of telecentre programs administered, there appears to be little information available on the USA approach, administrative efficiency, and the success of problems associated with other features of the program.

²¹ Levy, NRAW, 2003

territory, but only 5% of US customers. These systems include cooperatives, family owned companies, municipally owned companies, and investor owned companies.²²

The cooperative model is different than the traditional business model because cooperatives are member owned and do not earn a profit. Each member of the cooperative gets one vote, and the focus is on service rather than on profit. The profit that would otherwise go to outside investors is eventually returned to its members, as there are no shareholders outside the cooperative.

In Argentina, there are 320 rural cooperatives. In Poland, 53 licenses have been issued for rural companies that include both cooperatives and businesses.

In Poland the first two cooperatives were established in the early 1990s. At the time teledensity was 3% with 20-30 year waiting lists. Today, service in those areas is available everywhere with waiting time of only 2-3 days.

d. Interconnection Fees

Sustainable solutions to rural access may be best addressed, at least in the first instance, by promoting entry and the development of new, probably wireless communications, systems through effective interconnection policy.

Regulators and policy-makers in developing countries often fail to appreciate the central importance of establishing an effective, fair, and transparent policy for interconnection, especially between fixed and mobile service providers as central to the delivery of rural service. Interconnection issues are also inextricably tied to a host of related issues critical for imposition of fair interconnection payment arrangement.

Experience in both developing economies and developed economies suggests that there may be more than one approach to ensuring fair pricing structures to both fixed and mobile operators. However, experience to date also suggests that certain conditions be met for interconnection rates to be set in a manner that allows investors cost recovery, or at least provide an opportunity for cost recovery.

The developing nations in Southern Africa have adopted forward costing approaches as the relevant wholesale pricing standard. Properly applied such a standard should provide the assurances needed to attract investment. As applied in the developing nations, however, there are a host of related concerns that need to be factored into an appropriate determination of interconnection rates, or require a separate fix, but in no event ignored.

Interconnection rates, will, for example need to consider some of the broader economic issues in relation to currency fluctuations. The industry has emerged as a capital intensive one with potential cost streams and revenue streams in different currencies. This can prove a problem for risk for investments in countries with volatile currencies.

²² Norton, 2003 NRAW

Even focusing more narrowly within the sector, interconnection rates become a problem when one party or another cannot afford to meet its obligations (e.g., Nigeria and Malawi). In many countries, the mobile operators emerge as leading lenders to the government owned fixed line operators, sometimes with little hope of repayment. Retail charges for traffic between fixed and mobile operators can also affect traffic flows and exacerbate flaws in the wholesale pricing structures. In short, there are a range of issues that are less common in the developed world that should be considered by regulators in developing countries trying to foster investment. These issues are especially important in relation to the less profitable rural areas.

8. Public Access Points (public pay phones and telecentres)

Pay phones are familiar and some innovative approaches are having success.²³

- Peru was successful in promoting rural access pay phones through its Chilean styled Universal Service Fund subsidies;
- Senegal was also successful in promoting phone shops which have emerged to become roughly 1/3 of the Incumbent Operator's revenues since the program began in 1992.
- Grass roots phone shops and pay phones seem to be making more headway in developing regions. These are typically commercial operations and may involve as little as providing loans to women in villages that can then sell time to others in the village. In Bangladesh, the Grameen Bank established revolving loan fund for women to obtain micro-loans to purchase cell phones.²⁴
- South Africa and Botswana have a vibrant phone shop environment that relies on local entrepreneurs in concert with wholesale discounts from existing wireless GSM providers.

In general, pay phones have been introduced in ways that build on an entrepreneurial approach. Service can and is being provided using sustainable entrepreneurial approaches. Experience with simple pay phones to date appears to be yielding successes including many countries in Southern Africa where simply phone shops abound.

The experience with simple pay phones in rural areas, however, seems to stand in contrast to a much more ambitious approach to rural access generally known as "telecentres". Telecentres go by many names and come in many sizes, but the concept is broad enough to encompass a variety of approaches to a basic problem of limited access to advanced ICT capabilities in rural disadvantaged communities.²⁵ Cyber cafes represent a commercial equivalent, but are generally found only in urban areas, respond

²³ Norton, NRAW, 2003

²⁴ Norton, NRAW, 2003

²⁵ Telecentres are also known as "community learning centers", "public access centers", "community technology centers", "community internet centers", among others. Rusten, NRAW, 2003 *See also*, Norton, NRAW, 2003

to consumer demands, and are only marginally profitable in some of the more rural and poor nations in the region.

The approach to developing those centers historically has been donor driven without strong commercial linkages. They typically are stand-alone operations, not linked to the public sector and not accepted by the incumbent operators. Sustainability has emerged as the central challenge.²⁶

At its core, community access approach is intended to address issues of access and affordability, the relative dearth of local technical skills, and a lack of locally appropriate content.²⁷ Telecentres provide communities with advanced access in order to increase access, education and training, business skills, and business services at rates that are affordable to the isolated rural communities.

To date, the establishment of telecentres has been a “work-in-progress” and developers are attempting to address the fundamental issue of sustainability.

South Africa’s experience with telecentres is instructive. In the late, 1990s, the South African Universal Service Agency through all its energy and funds into the establishment of regional telecentres with access to fax, scanners, computing, and internet. The cost of these facilities was approximately \$40,000 per. Of the 90 or so South African telecentres initially funded through by the Universal Service Agency most have already closed and many of those that remain appear to be unsustainable. Total commercial self sufficiency may not be the relevant, since telecentres typically rely on outside funding support. In the context of South Africa, however, the high cost fundamentally limited the ability to build and sustain the hundreds of telecentres that were originally planned through the available universal service fund supports. In broad terms, the telecentres experience in South Africa proved to be an expensive lesson.

Added experience, however, is yielding new directions and there now exists a considerable body of knowledge and experience in new guides and models.²⁸

The approaches for addressing the sustainability model include the following:²⁹

- (i) Commercial Approach – Here the telecentre is owned by an entrepreneur, the objective of the center is profit and services are purely demand driven, meaning the types of services and fees are customer driven (i.e., not necessarily social benefit driven). Subsidies or supports, to the extent required, could be established through supports, including universal service fund mechanisms and revolving loan funds, described elsewhere.

²⁶ Norton, NRAW, 2003

²⁷ See, Rusten, NRAW, 2003

²⁸ See, Guides to Running a Community Technology Center at <http://www.trasa.org/article.php?articleid=8§name=publications&deptid=7>

²⁹ Rusten, NRAW, 2003.

(ii) Non-Profit Approach – At the other extreme are the pure not-for-profit centers. Here, money comes from non-government-organizations (NGOs) with a mission that is fully consistent with that of the center or centers that are sponsored by the contributing organizations. Sustainability, however is a concern when the center depends on potentially volatile funding sources.

(iii) Government Model – The government model effectively creates a center that in a manner that is consistent with or incidental to the delivery of a government service or a range of government services. This approach could include, for example, library, post office, or municipal access points funded through government taxes and supplemented by fees for services.

(iv) School Model – The school model is a subset of the Government Model, but recognizes that computers and technical skills are sometimes a part of the educational efforts. As such, the telecenter may merely a matter of broadening access to the educational institution during periods when school is out. However, telecentres established in conjunction with schools brings forward new challenges like security and hours of operation, that could prove problematic.

In general, the issue of sustainability may simply be an issue of blending one or a number of the different approaches or models listed above, perhaps developed in conjunctions with funds contributed from universal service fund mechanisms described elsewhere to help address the critical issues of seed funding for such organizations. Discounted rate structures from obliging telecommunications service providers, may also contribute to the longer term success as high fees for connections and upkeep of lines remains a key barrier to sustainability. Such rate structures can be encouraged by regulators and need not involve subsidies, but rather discriminatory rates that favor educational or other appropriately defined service categories, similar to the E-rate concept developed in the United States.

The hard lessons learned in South Africa suggest that efforts to create sustainable telecentres is a challenge that should not be taken lightly, especially given the high costs that such centers can present. Successes in the future will be a challenge, will probably require some form of sustainable subsidy, and will in any event require an initial investment in understanding the market and the needs of the community being served prior to entry.

Conclusions

Until recently, the SADC region adopted a framework that fundamentally relied on licensing restrictions and obligations, generally in conjunction with a privatization or license award in exchange for build out commitments and universal service. While elements of this approach continue, there is a growing body of experience and emerging policy shift toward policies that can work effectively in a more competitive policy environment.

The recommendations emanating from the discussion include the following. Policy and regulatory environment should support and, ultimately harness liberalization in ways that support rural development and lower prices. Rural expansion and subsidy strategies should be structured in ways that fundamentally complement innovation and use of new technologies.

Where subsidies are employed, funds should be leveraged in ways that ensure sustainable services after program subsidies diminish or depart. Low budget phone shops have sprung up and appear to be flourishing as low budget ways to extend access while encouraging local entrepreneurship. The relatively high cost telecentres have, in large part, proven unsustainable in what appears to be a common event. Future activity here will require a better understanding of the real potential and require more innovative approaches to lowering costs or leveraging funds from other complementary public sector activities.

REFERENCES

Norton, Marlee, *Sustainable Rural Telecommunications Service Mechanisms around the World*, NRAW, February 2003. www.trasa.org

Rusten, Eric, *Supporting and Enabling Universal Access to ICTs by People in Underserved Areas of Namibia*, NRAW, Feb 12, 2003. www.trasa.org

Hodge, James, *Extending Telecoms Ownership in South Africa: Policy, Performance and Future Options*, University of Cape Town, TIPS Working Paper Series (WP7-2003), 2003 (1).

Gillwald, Alison, *National Convergence Policy in a Globalized World: Preparing South Africa for Next Generation Networks, Services and Regulation*, LINK Centre, University of the Witwatersrand, Johannesburg, 2003.

Hatfield, Dale, *Wireless Technologies and Rural Access*, NRAW, 2003. www.trasa.org (1)

Hatfield, Dale, *Elements of a Supportive Regulatory and Policy Environment*, NRAW, February 11, 2003. www.trasa.org (2)

Hernandez Gallardo, Christian, *Regulatory Models in Telecommunications Across Latin America and Their Effect Upon Mainline Penetration*, Independent Study Project, The Wharton School, April 2003.

Levy, Kenneth, *Elements of a Workable Universal Service Fund, National Exchange Carriers Association (NECA)*, NRAW, February 12, 2003. www.trasa.org

Organization for Economic Co-Operation and Development (OECD), *Regulatory Reform in UK: From Transition to New Regulation Challenges*, September 2002.

UK Department of Trade and Industry, *Communications Liberalization in the UK: Key Elements, History & Benefits*, March 2001.