

VIII BEYOND THE HORIZON: RECOMMENDATIONS FOR ACCELERATING UNIVERSAL ACCESS IN LATIN AMERICA

VIII.1 Introduction

Over the past decade, the Latin American region has showcased many promising and successful policies to promote widespread access to telecommunications services for increasing segments of the region's population. Whereas up to the early 1990s saw telephone access in most countries of Latin America was restricted largely to major urban areas in most countries, with little competition, unreliable service, and long subscriber waiting lists. Today nearly every country in the region boasts of robust growth in both fixed telephone and cellular mobile services, as well as much broader access to public telephones in rural and peri-urban areas. At the same time, access to Internet services has also grown steadily, and public and institutional projects to connect citizens, students, government, and businesses to Information and Communication Technologies are expanding rapidly.

Much of this growth is directly attributable to more open market policies, which have brought in competitive investment and creative energies, supplemented by public policy and civil society initiatives, from Universal Access Programs and funding to municipal and regional access projects to some ICT-for-development strategies. Today, investor interest among global technology and telecommunications suppliers, as well as national and local entrepreneurs, is as high as it has ever been for this region, and prospects seem bright for a new wave of investment and growth, whether in further expansion of telephone and cellular networks or in installing new broadband access networks.

The discussion, examples, and ideas highlighted in the previous chapters of this report illustrate both the strengths of the many different approaches to Universal Access that are being pursued across Latin America and elsewhere, and the range of challenges and opportunities that remain to build upon this progress. With continued emphasis on streamlining policy and regulation to further encourage market forces and new entrepreneurial approaches, on exploring new technologies, and on designing and implementing tailored financial support mechanisms, the growth trends of recent years can be accelerated and spread to even wider areas and target

populations, toward a goal of truly “universal” access.

These ongoing processes and initiatives, however, do not merely represent a fixed set of plans or programs to be applied in increasingly larger scale, but rather a constantly evolving mix of experiments and lessons, from which the most promising practices can be extrapolated, together with new ideas and information, to devise ever more effective approaches to universal access policy. The previous chapter and annexes provide a wealth of information on actual projects which have been experimented with mainly in Latin America but also elsewhere. It is hoped that these pilot projects will serve those who wish to learn from some of the very positive experiences gained with them.

The purpose of this final chapter therefore is to look beyond the details of current or past experience, and to formulate a vision of next generation universal access options which policy makers and industry stakeholders in Latin America can consider adopting (and adapting) as part of a new forward-looking ICT development agenda.

Specific recommendations for national and local policy makers, Fund administrators, regulators and Regulators which are contained in the various chapters are summarized in Annex 1 of this report.

VIII.2 New Vision

To construct a new paradigm of Universal Access policy and programs requires first the definition of a New Vision of ICT access in Latin America. In the past, the targets of such policies were relatively modest by today’s standards. They aimed, for example, to provide a single public pay telephone in each village above a certain population size or lying within a certain distance from any person anywhere in the country, and even this goal required several years of sequential implementation. At the same time, liberalization and tariff reforms helped increase teledensity mainly in urban areas, but only incrementally (Figures VI.4, VI.9 and VI.10). Ultimately, the cellular revolution, and especially the introduction of calling party pays (CPP) and prepaid usage options, contributed unexpectedly to much faster market-driven growth, but again this occurred mostly in larger urban areas. Internet access in most

countries has been largely an afterthought, although a number of promising telecenter projects, as well as private cyber cafés in certain countries, have demonstrated growing interest and market potential, and some universal access programs have begun to turn their focus to Internet services.

The New Vision that we are proposing represents a much bolder leap forward in ICT access for all in Latin America. We believe that the time is right for a readjustment of conventional thinking, as a confluence of technological advances and dramatic reductions in the price of telecommunications equipment, market interest, political and regulatory capacity, and community involvement are creating the awareness and opportunity needed to carry the telecommunications/ICT sector to new levels of growth and integration in Latin American economies and society.

This vision is not fanciful, but is driven by the very real experience of numerous other countries – the United States and Canada, the European Union, Japan, Australia, and Korea, among others – which have demonstrated the value and impact of ubiquitous, high quality telecommunications and information services, and the viability of extending them to all corners of society. The economic and cultural barriers that may have perpetuated the “digital divide” between those countries and much of Latin America – as well as between the cosmopolitan and pedestrian demographics of Latin America itself – are now proving to be increasingly obsolete. Telecommunications, like food, water, housing, and transportation, is becoming a basic necessity of modern civilization, and at the same time an affordable and beneficial resource which can sustain, support, and transform communities of virtually any size and location.

From this perspective, and supported by the economic, technical, and policy analysis of this study, there is no longer any reason to restrict our Vision of telecommunications and ICT expansion to second-best, low-tech, last generation choices, even for lower income and remote populations. On the contrary, the evidence suggests that the advances of recent years, and those imminently before us, can knock down nearly all remaining barriers to universal access to the full range of high-end ICTs, while allowing their adoption and integration on a community basis toward the most appropriate local needs. In this spirit, the following represents a

simplified description of one manifestation of our proposed New Vision for Universal Access in Latin America. Many other variations and modifications are possible, but this example demonstrates the scope of potential deployment, the feasibility of the ideas, and ultimately the steps that might be necessary to bring it to reality in communities throughout Latin America.

- Network infrastructure, connectivity: In our vision of the not-too-distant future, cellular mobile and/or fixed broadband wireless access (BWA) footprints blanket nearly the entire country, including remote regions. Base stations (or at least the towers or other antenna structures) are shared by operators where it is not cost-effective to build them separately, as is backbone connectivity. Often, however, the backbone network will be owned by other (backbone) operators or systems integrators who will provide not only the required capacity (dynamically and on demand), but also switching, Internet access (IP Transit), system maintenance, billing, dynamic routing and other back office type functions which they make available to local access operators as a menu of options or as a package¹. These access networks provide sufficient transmission power and capacity to allow all towns and villages within range (in the order of 30 km depending on the terrain and the associated propagation characteristics) to be connected with broadband transmission capability (> 128 kbps). Locally, lower power WiFi signals are available at strategic locations. Backhaul is provided via broadband microwave, fiber, coaxial cable or satellite backbone networks according to the economics of the location. The hubs of these networks might be located in larger towns, central to administrative regions but not necessarily. In a growing number of cases these hubs or switches might be located outside of the region, outside of the country or even on another continent². In these larger towns around the hubs, fixed-line telephone connections (wireless and wireline) are widely available, linking to a switch either at the hub or in a distant location such as a provincial, departmental or national capital. In most larger locations, the option for high-speed fixed access lines is also available, for businesses as well as residences, over either telephone or cable TV networks. In smaller towns, local fixed access

¹ OmniGlobe and LocustWorld are two examples of suppliers and systems integrators who offer these types of services with options available to local access operators anywhere in the world. Most satellite operators also offer backbone capacity with IP transit services in addition to their more traditional bandwidth capacity offerings.

² Give Siemens example from Peru

connections are linked to public telecenters and administrative locations, with household service available but on a more limited basis.

- Services: In the larger towns, full service fixed telephone, mobile telephone, broadband Internet, cable TV, and other advanced multimedia ICT services are accessible to all at market prices, while affordable public telephone and cyber café alternatives are also available. Individual customers generally rely upon their personal mobile phones for local voice telephone calls and text messaging, while businesses and institutions use a combination of fixed lines, cell phones, and local area virtual networks for local and internal telephone calls. For long distance and especially international calling, the majority of customers rely upon Voice-over-IP (VoIP) services – either from personal and business Internet connections, or via public access telecenters, cyber cafés, VoIP hard or soft telephones or VoIP-enabled public telephones. Some customers may have their own VoIP-compatible hybrid mobile devices. Call charges for these services are low, about equal to local call charges.

In some areas broadband digital wireless access services may be available throughout all larger towns, and public connection to the Internet via these local wireless networks for free, financed by subscriptions, e-commerce and advertising revenues, premium services (including VoIP), and local administrations. The schools, government offices, and business community in the larger towns share access to multiple high capacity connections on a commercial basis.

The picture in smaller towns and even more remote villages is not very different. Cellular networks with full mobility and roaming or with home zoning or limited mobility (e.g. only nomadic) functions as well as wireless broadband data signals are also available to the greatest extent possible, linking to the network hub and backbone. Because incomes are lower, fewer customers can afford individual service, and so more emphasis may be on public access facilities. These include both informal and formal resale of cellular, BWA or VSAT based phone service, including officially designated 24-hour public telephones, typically utilizing fixed cellular or BWA pay phone instruments. The local school and administrative

offices have computer and Internet facilities, including trained technicians able to operate and maintain them, and these offer broadband Internet access to students, officials, and the public, in many cases supplemented by separate fee-based public access telecenters which offer not only access but also computer and Internet training. Again, all of these facilities allow for low-priced long distance and international voice calling via VoIP, as well as full-service Internet access. Where signals are transmitted via the radiofrequency spectrum, users who have computers with built in or insertable modems can also obtain Internet access at little or no cost.

In addition to these voice and data services, many locations are also served by locally originated radio and television broadcast signals (commercial and public), transmitted from a regional hub location. Broadcast programming is a combination of locally produced material (public and private) and programs downloaded to the broadcast stations via the broadband Internet connection or more traditional signal broadcast transmissions. In many areas, cable TV connections also prevail, offering both national and international programs as well as local content. Other advanced audio and video transmission technologies, such as broadcast satellite, and Internet “streaming”, augment these choices for many consumers. There is also increasing use of digital audio file sharing and storage applications (.mp3, iPod, etc.), and users are able to post on-line their own digital photographs and videos to share with friends and family around the world. Also, users have access to a full range of public service applications (e-government, e-learning, e-health, etc.), as well as innovative and valuable e-commerce functions to enable both employment opportunities and on-line transactions.

- Market structure and business sector development: In most towns, many the local telecommunications services are locally owned and operated, either by independent community or regional network operators, or by subsidiaries or affiliates of national operators. Telecenters, pay phones, and public access services are provided by small local businesses, public service agencies, non governmental organizations, local business and trade associations and government institutions. The backbone connections and cellular signals are

provided by larger national or regional wholesale network operators, which receive revenues from transit and interconnection traffic sufficient to cover their infrastructure costs, and may often partner with local access providers. Local and community services are generally self-sustaining, in part due to revenue from public institutional users (government, schools) funded by national or state budgets, and incoming interconnection charges, as well as the investments and activities of content providers, advertisers, and other entrepreneurs and in part due to local usage fees. The ICT sector as a whole has become a key source of new employment, economic growth, and diversification of business activity, especially helping to integrate more remote locations with the national and global economy, slowing the decline of traditional sectors while helping reverse urban sprawl, emigration, and “brain drain” of talented youth.

VIII.3 What is needed?

What is required to bring about this new vision across to Latin America? What combinations of government and industry and civil society initiatives, at the regional, national, and local levels, must be undertaken? How should available but limited financial resources be allocated? What technical deployments are most essential, in what size, scope, and locations? While there is clearly no single answer that will achieve the idealized results that we are anticipating, and each country will confront a range of unique barriers and opportunities, there are some key principles and high priority actions that can and should be followed by stakeholders in nearly every country, which can go a long way toward accelerating the establishment of truly universal Information Societies in Latin America, in the foreseeable future.

The most critical elements of this new paradigm, as we see them, are summarized in the following sections.

VIII.4 High level planning and coordination

The goals of widely disseminating access to advanced ICTs and rapidly moving toward an integrated Information Society go well beyond the mandate of the telecommunications sector alone, and of telecommunications regulators. The role of telecommunications is of course vital, but ideally it should be coordinated at the

highest levels of public sector planning and policy with other key stakeholders and strategic efforts. As many developing countries have adopted poverty reduction strategies with the support of international organizations such as the World Bank and CEPAL, it is useful to consider establishment of similar multi-sector Information Society strategies, to bring together the resources and leading voices needed to implement them effectively. Some of the essential features of such a coordinated strategy should include:

- Multi-sector participation; leadership: Many ambitious projects have been hindered by lack of cooperation among key agencies, and especially lack of leadership. Ideally, there should be a high-level coordinating committee or other institutional structure (separate from the Universal Access Program or Fund administrator, but working together with such agencies), with sufficient mandate and active participation to ensure common planning and sharing of resources and ideas among the varied sectors and stakeholders who must contribute to ICT strategic planning. These include, at least: the national government departments responsible for telecommunications and ICTs, the regulatory authorities, Fund administrators small and large operators and service providers, suppliers; education and health sector officials, broadcasters and cable TV operators and other participants from other media including journalism, audio/video, etc.; energy and transportation infrastructure specialists; and civil society representatives involved with disseminating and applying ICTs for development purposes. Among the most important primary issues should be the mandate and leadership of such planning efforts, which should be given the highest level authority possible. This responsibility may in some countries properly be assigned to telecommunications sector officials, given their technical and market expertise, but not necessarily.
- Coordination of policies and initiatives: The main objective of such a coordinating committee should be to ensure that diverse initiatives that are often pursued by various agencies are not undertaken in a vacuum, but build upon each other in complementary and cost effective ways and to avoid duplication of effort and resources which unfortunately happens more often than not. Telecommunications infrastructure projects, for example, should be ideally

planned with an understanding of other infrastructure investments (electricity, roads, e.g.). Information Technology programs, whether for schools, government offices, or communities, should correlate closely with network rollout plans, even if the financial and implementation mechanisms are under the control of different authorities. Municipally sponsored projects should dovetail with national or regional projects. This is not to say that all activities must be confirmed in advance under a single master plan, nor to stifle individual or local initiative, but to ensure that, at a minimum, there is an open forum for sharing resources, ideas, and experience as effectively as possible. Such coordination is especially essential in the realm of e-government programs, which often depend upon limited technical personnel and other resources.

- Demand aggregation: One key opportunity that should be emphasized in this context is the market stimulating impact that deliberate aggregation of public (as well as private) ICT demand can have upon investment and financial incentives, particularly in more remote and under-served areas. Specifically, governments tend to be among the largest customers for telephone and ICT services, equipment, and applications in many countries, and the trends toward implementing e-government systems can involve large new requirements for government network connectivity, including links to remote offices and local administrations. These projects, together with similar plans for ICT access and applications in schools, health clinics, and the like, suggest that new and high capacity network connections to many locations can be financed largely or entirely by payments from government resources. Again, by coordinating these types of plans in tandem with public universal access objectives, the market opportunity confronting potential suppliers (whether national or local operators) can be optimized.
- Capacity building: Human resource capacity is an overriding pre-requisite for successful design and implementation of every ICT development program or universal access policy, as well as the underpinning of market growth as a whole. In this areas well, coordination of training and capacity building efforts can be highly cost-effective. This is particularly true of technical training programs, for example, which would be aimed at enhancing the capabilities of public agency

staff to utilize computers, software, Internet, and other applications. However, capacity building for regulatory authorities, policymakers, local government officials, smaller entrepreneurs, and the public is also important to enhance the effectiveness and value of access projects across the sector. Ideally, such programs should be instituted on a broad, inter-agency basis to maximize their impact and use of limited resources, while also encouraging the development of private and independent training and human resource enterprises.

The specific recommendations summarized in Annex 1 under A. Universal Access Programs and Funds address this identified need for high level planning and coordination.

VIII.5 Further unleashing of the market

In virtually all countries in the region, our analysis suggests that there is more room for progress -- in some cases a great deal -- in fostering market-based investments and entrepreneurship to fill many of the remaining gaps in the delivery of both basic and advanced ICT access. With the ongoing developments influencing telecommunications technologies and economic conditions, the market frontier is continually being pushed back, typically faster than lingering policy and regulatory barriers to further market-driven growth can be removed. To accelerate the opportunities for new players, from transnational investors to local SMMEs, to invest in the expansion of ICT networks for underserved populations, governments must regularly re-evaluate the appropriateness of anachronistic restrictions, obligations, procedures, and financial barriers that may restrain such market expansion. As described in Chapter VI, some critical considerations to emphasize in the review of such policies include:

VIII.5.1 Ensure technology neutrality

Technological neutrality in design and implementation of Universal Access policies is an important principle, especially given that industry operators are typically in the best position to determine the most appropriate and cost-effective technical means to provide services under different conditions. This is even more imperative in the

current environment of rapid and uncertain technological change, particularly in the area of rural access technologies.

One of the most prominent and critical examples at present is the role and potential of Voice-over-IP applications. As discussed in Chapters VI and VII, VoIP creates the potential for vast shifts in underlying service costs and pricing, to the advantage of rural customers and operators in particular. However, regulatory and licensing restrictions on this service in many countries can impede its development, principally to maintain the status quo for traditional operators, but damaging Universal Access prospects. Eliminating these barriers, and actively encouraging such “disruptive” technologies as VoIP and others, can go a long way toward accelerating the realization of our Vision of a new Universal Access landscape in Latin America.

VIII.5.2 Reform and expand frequency access and small operator licensing

Access to available radio spectrum is one of the most significant potential bottlenecks to rapid and competitive expansion of telecommunications networks, especially in rural areas. In many countries, restrictions and barriers in the assignment and use of key frequency bands continue to hinder potential market initiatives. This can involve basic allocation of frequencies, licensing restrictions, burdensome application and approval procedures and qualifying criteria, fees, and other impediments. The prospects that we have illustrated for integrating new broadband wireless technologies and expanded fixed wireless and mobile services will hinge greatly upon streamlining and eliminating many of these barriers including the removal of any licencing and remuneration requirements for certain spectrum.

At the same time, the goal of encouraging new entrepreneurs and independent local operators and investors to play an active role in expanding the scope of ICT access, especially in rural areas, requires that the licensing process, and related market structure policy, be tailored to encourage that option. In many countries, the current licensing regime, even following substantial liberalization in some cases, still inhibits or restricts the prospect of such local entrepreneurship in telecommunications. Regulators should examine their licensing requirements to minimize barriers, reduce administrative burdens and fees, and seek to update procedures to encourage the

entry of new, smaller operators wherever possible.

VIII.5.3 Facilitate dissemination of new and adapted technologies

Telecommunications equipment manufacturers faced with stagnating sales in the developed world have been putting substantial effort into developing new technologies and adapting existing ones for markets where they believe there is still a potential for significant growth. Mature narrowband (2G) network and terminal equipment is being improved, made more rugged and cheaper and generally more adaptable for use in rural and remote areas. Many older and new manufacturers have also been developing various types of wideband mobile (2.5G and 3G) and fixed broadband wireless access (BWA) systems which promise to provide cheap, high speed data and voice access (and even with mobility) to whole communities or large regions. These innovations have, however, come not only from the large or medium sized traditional manufacturers. Small companies, many local, have adapted, further developed and integrated existing technologies for use in specific rural and remote area applications. Many are using mass produced WiFi, VoIP and other proven technologies to provide innovative and affordable communications solutions which are equally adaptable to purely commercial situations in North America and Europe as they are in remote areas of Latin America.

This study has shown that there is great potential in achieving many universal access goals by promoting demand driven, small scale, locally initiated projects. Some very promising initiatives are presented in Chapter VII and corresponding Annex 2. Because of their small size such projects, however, do not have large visibility. Those that want to be connected and small entrepreneurs and communities that are prepared to take the necessary initiatives and perhaps provide some financing may not be aware of the most appropriate technology and source of that technology for their particular circumstance. The supplier who may also be relatively small and quite new in the market and not be very knowledgeable of the region or areas that is seeking a way to be connected. An important element of the new paradigm therefore is the creation of a platform or environment which facilitates the spread of information of the requirements and particular circumstances on the one hand and the various possible technical and financial solutions which may be available. Such a platform would be tied in with other elements of the paradigm such as specially targeted

microfinancing possibilities, proposed regulatory adjustments and service and market innovations. It might be web based but would also encourage and facilitate stakeholders meeting with each other and learning from actual experiences in the field. Regulatel would be the ideal coordinator and driver of such a platform for Latin America which should also involve NGOs, academic and the multilateral financing institutions. The platform could also be used to neutrally evaluate the success factors of such small scale demand driven pilot projects and determine the extent to which they are replicable in other regions where circumstances are different and if not what adjustments might be indicated.

VIII.5.4 Further streamlining and reform of regulatory processes

Effective regulation remains a cornerstone of telecommunications development policy, and regulatory oversight and implementation will be an even more critical component of a broad-based universal access strategy. Section VII.5 of this report discusses a number of regulatory measures which need to be examined and adopted to the special circumstances needed to achieve the universal access objectives in this Vision. They include spectrum use policies, VoIP, licencing, quality of service and standards policies, tariff and interconnection regulations, and facilities and infrastructure sharing. As more players, more diverse technologies, and a wider scope of services and applications become involved in an increasingly competitive landscape, the regulator's job is to ensure that the end result, affordable access to high-quality services and non-discriminatory competition, is achieved fairly and sustainably. There are a variety of key areas in which regulators' decisions can have a critical impact upon the effective deployment of our Information Society vision, some of which deserve high priority attention. Again, deliberations on these matters should be closely coordinated with other high-level policy, planning, and regulatory efforts in related sectors and there is an obvious and very important role for Regulatel to play in analyzing and disseminating best practices.

- Interconnection: Procedures and standards for interconnection are a critical component of any telecommunications sector liberalization and development policy, and are especially essential for effective implementation of Universal Access programs. In the Vision we have described, services and network

facilities would be provided by a variety of operators at different points within the network, from backbone transmission to local access connectivity. All of the operators providing these components must be confident that they will be able to interconnect with each other on fair and efficient terms, with timely support and response to technical requirements. Where a range of alternative technological solutions will be used, the technical specifications for interconnection could become especially complex, requiring that the regulator engage actively with engineering specialists in the affected operators where any conflicts may arise. Of course, the financial terms of interconnection can make the difference between viability and failure, especially for small, rural operators. Some have advocated introducing “asymmetric” interconnection charges, so that rural operators will receive higher terminating payments than they must pay out in charges to other operators in recognition of the higher per unit costs of building and operating rural networks. This type of policy option should be seriously considered in the context of broader interconnection terms and conditions. Most important is to ensure that interconnection agreements are arrived at quickly and fairly whenever new operators, particularly smaller local operators, enter the market, to reduce risk, speed up the launch of services, and generate needed revenues on a timely basis. The regulator has to ensure that large and small operators are treated equally in this respect.

- Facility and infrastructure sharing: Related to the issue of interconnection is the need to promote facility and infrastructure sharing rights and obligations. New and smaller operators must be able to share, on an equitable but financially viable basis, available rights of way, towers, poles, conduit, and building space and equipment, as well as to lease dark fiber and unbundled network elements at cost-based prices and under non-discriminatory terms and conditions, from larger and more established operators, to optimize their prospects for providing cost-effective services on a sustainable basis. These issues are often viewed primarily in the context of head-to-head competition between incumbent and new competitive operators, including access providers, typically in larger urban areas and more developed networks and economies. But in pursuing rural network access deployment, such facility and infrastructure sharing requirements can help encourage the very investments needed to connect previously unserved

locations, for example by utilizing space on microwave and cell towers to connect lower power wireless transmitters, and by permitting leasing of excess backhaul transmission capacity at prices based on marginal costs. The larger infrastructure operators often end up benefiting through the new traffic that is generated for their networks by small local operators established in areas which these larger operators did not want to exploit.

- Prices: In a number of countries, wholesale prices also remain an important challenge, especially in the context of universal access to ICTs. Excessively high prices for high capacity leased lines, can make the business prospects for both firms and Internet Service Providers, particularly those serving small markets, prohibitive. While competition for retail services and the rise of VoIP are likely to continue to drive down most consumer prices, backbone and international higher capacity services are often not nearly as competitive in many remote locations. Regulators should examine the rationale for these and similar prices that can form significant barriers to expansion of Internet access and introduce measures to ensure that they approach costs.

Specific regulations with respect to these and other regulatory policies and strategies for universal access can be found in Annex 1 (B.4).

VIII.6 The new mandate of the Universal Communication Fund

The role that Universal Access/Service Funds have played in the growth of telecommunications in Latin America over the past decade has been important, although not nearly as significant as the market forces highlighted above. The Funds have in some cases helped to close some of the gaps not addressed by the market, especially in the most remote areas, to provide public access to basic telephone services, and sometimes more. In many other cases, however, very large amounts of collected funds have remained unused for various bureaucratic and political reasons. Where Funds have operated even partially many thousands of citizens and communities have benefited and the lessons learned are valuable for countries that are still struggling to establish similar programs in many regions.

A central theme of this report, however, is that the telecommunications sector in Latin America is changing very rapidly, and the previous mandate of these public financing mechanisms is becoming outdated as a result. Not only has access to cellular mobile networks spread to 90% or more of many countries' populations on a purely commercial basis (with room for the market to cover yet further segments), but demand for services beyond basic voice telephony has begun to take off, just as new technologies are arriving to allow innovative and cost-effective means to deliver these new services. In addition, as the objective of universal (community-based) access has begun to become reality, a new goal of concentrating on universal (i.e. individual) service presents itself. Where network access is available, therefore, regulators and Fund administrators must begin to ask about the affordability of services for those on the lowest end of the income spectrum, and to consider mechanisms for supporting these users' needs for communication as well.

Thus, while this report has highlighted many recommendations for further improving, streamlining, or realigning the activities of public UAFs/USFs, it is useful to define a new mandate altogether for the role of these Funds in the growth of the Latin American telecommunications sector in the years ahead. The key dimensions of the next generation "Universal Communication Fund" (UCF) should include the following:

- Support for ubiquitous deployment of advanced technologies and services: As the communications technology revolution continues, the new UCF should become a leader, not a delayed follower, in ensuring that all populations have access to the most modern and effective networks, services, and applications available on the market. The specific recommendations in section B of Annex 1 pertain to innovative transmission technology strategies and practices for local access address. The present view of this horizon would thus include broadband, wireless, multi-service platforms permitting full access to all functions and features of voice telephony, Internet access, data transmission, e-commerce and e-government, multimedia entertainment, and interactive communications on a global scale, with minimal barriers or restrictions. As new capabilities come on-line, the vision should shift to encompass these as well, and the system should be flexible and open enough to ensure such constant adaptation, just as businesses and consumers must do the same. The overriding purpose of the

Fund, therefore, should be to maintain a front-line position along the Market Frontier, continually assisting the expanding ICT industry to close whatever access (and service) gaps may arise, while reinforcing the sector's ability to reach toward and push back that frontier.

- Emphasis on market orientation, sustainability, entrepreneurship: The role of the new UCF must be seen clearly as augmenting and encouraging the market, as a partner with commercial ventures of all sizes, which plans and functions with the same business-minded perspective, even while emphasizing non-market benefits and objectives that the private sector may not address. The Fund's purpose is not to supplant the market, but to encourage and help it, from the expansion of large telecommunications operations to the establishment of new, small enterprises, which will be able to grow, innovate, and take the industry in new directions beyond what the Fund's initial financial infusions could ever contemplate. By using at least a portion of its financial and human resources to act in an innovative way as proposed in Chapter VI (VI.3.4d) more as a kind of public-private financing institution, offering a range of venture capital instruments, loans, guarantees, grants, and micro-credit services, often in partnership or coordination with other public interest and private mechanisms, the UCF can transform its role from one of primarily government subsidy to a strategic player in the evolving marketplace. (See Summary of Recommendations, Annex 1, A.3 and B.2)

This role depends heavily upon adequate technical capacity and acumen within the UCF administration, and in this respect the Fund should not seek to over-reach its capabilities, or its position in the industry. In many cases it will require a redefinition of the Fund's mandate and also as it has been suggested (Annex 1, Recommendations A.2) the Fund administrators greater autonomy in deciding how money is to be disbursed. Where private or more well-established financial mechanisms exist, the Fund should not compete with these nor otherwise distort the market. Where partnership with other financing agencies would further both groups' objectives, the Fund may be able to play a more passive role, by contributing to a larger process. But where key gaps exist in access to start-up

capital, commercial loans, consumer credit, risk mitigation, or other vital impediments to telecommunications sector expansion, the Fund should be prepared to step in and help build commercial bridges between small entrepreneurs and sources of financing to long-term sustainable financing (Annex 1, Recommendations B.2, Financing Innovations) .

- Decentralized, bottom-up planning and project definition: The success of community-focused projects depends critically upon the active involvement of stakeholders at the local level, from the planning to the implementation stages. Each Fund-financed project should ensure that key local representatives and organizations are engaged and committed to following through with management or operation of new local and regional networks, school programs, and/or entrepreneurial ventures of all kinds. In many cases, the goal should be to promote the economic and social development of the locality and the region, to foster small business opportunities, and to provide jobs, training, and income for women and men in the targeted communities. This objective also implies that necessary capacity building measures should be incorporated in projects' scope, to help expand the options for local participation and long-term success (see below).

As discussed in Section VI.3.3, project definition and Fund disbursement can be streamlined and accelerated by encouraging local participants to identify and plan potential projects from the outset, rather than relying primarily upon top-down, centralized approaches. To the extent possible the UCF emphasize bottom-up definition of objectives, needs, and opportunities from around the country, and makes financing available according to general (and flexible) criteria, in much the same manner that commercial banks respond to market trends rather than try to create them as described in Annex 1 specific recommendations related to universal access policy, strategy and coordination among stakeholders. The Fund must still maintain ultimate control of its allocation decisions, based upon transparent and non-discriminatory principles and high-level development targets, but it should promote innovative, entrepreneurial thinking among those most likely to be directly affected by its decisions at the local level.

It is also very important as pointed out in Section VI.4.5 that national, regional and local universal access programs be coordinated with community organizations and non governmental organizations who are striving to achieve similar goals. This is not only to ensure that wasteful overlap be avoided but also so that these organizations like the Fund administrators can learn from the experience of the other. Often also the Fund administrator and/or regulator can assist these smaller less well connected organizations. (Annex 1, A.6)

- Target universal service goals, and open access principles: The time may have come, and it is certainly nearing, when the UCF's policy goals in Latin America should move beyond public, community-based access to communications facilities, toward our vision of true universal service, on the individual and/or household level, as well as for institutions and businesses throughout all regions of a country, from urban to remote. This means that the Funds must begin to focus not only on infrastructure deployment and service availability, but upon innovative measures to ensure that communications services are actually utilized by people, businesses and public institutions at all levels of society. In some cases, this may require developing demand-side subsidy programs, along the lines of the USF models in North America and the European Union among others, in which low-income households as well as key public institutions qualify for reduced-price or even free service, with various means-tests to ensure fairness and appropriate allocation of resources.³

On the other hand, one of the most promising features of the newer technology platforms that are emerging in this sector, particularly broadband wireless access systems, is that they offer the promise of much lower costs and prices for all manner of high-quality services, from international voice telephone to high capacity Internet based communications. A further important principle to ensure that the economic benefits of these developments flow through to all users is the concept of "open access" to networks and services that may be made available

³ It has generally not been within the mandate of this study to examine or recommend such demand subsidy mechanisms, although there are a number of working models in place in the regions mentioned. Before such programs are introduced widely within Latin America, it may be more appropriate to review the impact of new

on a public basis. Open access to WiMAX signals within a community implies that all users may connect to these networks for minimal charges, or even for free if the local government underwrites the connections. With such systems and principles, actual use of services can be dramatically less expensive for most common applications, and the UCF can focus its efforts on helping to expand demand and supply of related equipment (computers, soft phones, new integrated wireless devices) needed to take full advantage of the technologies, as well as appropriate applications, content, and capacity building (see below).

- Incorporate support for ICT applications, content, capacity building: There is a growing recognition that the success of advanced telecommunications/ICT development programs will depend as much upon the quality of the information content and applications available via new networks, and upon the level of training and awareness of users, operators, service providers, policy makers and regulators, as upon the availability and affordability of infrastructure and technical facilities. While other programs besides Universal Funds may often take the initiative to support some of these needs, and these must be coordinated with infrastructure and service financing projects, there is also a strong case to be made to incorporate such “soft” components into the mandate of the Universal Access Fund as well.

Particularly where the Fund is promoting an increasingly commercial orientation, and the activities of small ventures engaging in a variety of creative business plans, it makes sense to expand the view of program financing to help launch, and sustain, enterprises that highlight innovative uses of technology, business practices, financing, and service provision, which can generate increased demand and economic benefits for local communities. Service innovations might include, for example: human interest video and audio programming (news, entertainment, public affairs) transmitted via the Web over broadband links, and simultaneously on broadcast and cable TV facilities; instructional and informational interactive software applications for small businesses, farmers, mothers, students, the disabled, and other interest groups; on-line discussion,

technologies mentioned in this section and throughout this report, to determine their effect in reducing affordability gaps for both voice and Internet services.

research, and self-expression programs to encourage promotion and exchange of indigenous cultural legacies and local political initiatives. All of these and countless other ideas are likely to have both commercial appeal and social value worthy of some degree of financial backing by the Fund.

With respect to training and capacity building, as discussed above, human resource capacity is the lynchpin needed for all other objectives to succeed. The pressing need to reinforce personnel skills within the public and private sectors, as well as to educate consumers and user groups at all levels as well as entrepreneurs and small operators, dictates that Universal Funds should strongly consider requiring that training programs be an integral component of their financing strategies. Such programs may include underwriting existing or new technical or management training initiatives by established educational institutions, or industry-based training to be introduced by service providers as an element of their business plans. The “market value” of such capacity building may be longer-term in nature, and hence difficult for entrepreneurs and small businesses to justify within their tight budgets, and thus especially appropriate for public, shared industry through the Universal Fund mechanism.

The set of specific recommendations on business practices, commercial, service delivery and partnership innovations in B.3 of Annex 1 also relate to this general area of developing support for ICT applications, content and capacity building.

VIII.7 Role of Regulate

Regulate can and should play a vital role in ensuring the implementation of this New Vision for universal access in Latin America. As pointed out in Chapters VI and VII and Annex 1 (A.7, B.2, B.4 and C.1) Regulate should gather, analyze and disseminate among its members best practices with respect to policies, strategies, and applications in all areas of Universal Access Programs and Funds including general policies, strategies and operation of universal access programs and Funds, technologies, special regulations, innovative business practices and financing mechanisms, service delivery alternatives and partnership arrangements. It should create and maintain up to date a data base of relevant indicators and it should

promote cooperation and assist in training of all stakeholders in areas of universal access. The success of this joint effort by all 19 countries will depend on how effective this collaboration and leadership of Regulate! is.