

Policy and Regulatory Issues Module: Overview Paper

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1. Introduction

This overview synthesises key issues and emerging options in the area of ICT policy and regulation as they affect access and affordability for poor people and communities.

It looks at both policy and regulation, though the two are not always easily separated. In general, policy provides the broad thrust of what is to be achieved, and regulation creates the mechanisms to achieve it. This is usually done with the oversight of a government ministry or an independent regulator. Some policies are detailed and prescriptive, leaving regulation little room for manoeuvre; others are open, even vague, with ample scope for innovation at regulation level. Effective outcomes require a combination of good policy and good regulation, the one reinforcing the other.

ICT policy makers and regulators can influence pro-poor developments by:

- Deploying universal access policies and regulatory measures that directly target poor people and communities.
- Encouraging a general sectoral environment conducive to affordable and accessible ICTs overall that ultimately benefits all sections, poor as well as rich.
- Influencing and cooperating/coordinating with other policy areas in ways that will promote a focus on pro-poor actions (e.g., in public service provision, enterprise development and rural development).

2 Emerging issues and trends in pro-poor ICT policy and regulation

Issues and trends in policy and regulation are outlined below, beginning with those most directly associated with pro-poor potential.

Universal access policies

The goal of universal access, often set down as precise targets in policy and regulation, includes the provision of affordable telephony and – now almost always – internet.¹ Achieving universal access is an objective of virtually all telecommunication regimes, monopoly or otherwise. This comes from the recognition that telephony and increasingly the internet are regarded as basic services to which everyone is entitled.

The “standard” approach to universal access policy, as recommended by the European Union and World Bank, includes the establishment of a universal access fund (UAF), to be administered by an independent regulator and financed by the main operators in the sector. This is often in combination with other measures designed to roll out access to areas that are underserved by markets. There are many ways of administering UAFs.² These include

¹ For the distinction between “universal service” and “universal access” see the *infoDev/ITU ICT Regulation Toolkit*: www.ictregulationtoolkit.org/en/Section.3160.html We are concerned here with the latter.

² For a summary description of universal access funds in 46 countries, see Intelecon *Universal Access and Service Funds, Update December 2007* (Vancouver: Intelecon, 2007) www.inteleconresearch.com/pages/documents/UAFunds2007update.pdf; for a summary of best practice in UAFs, see Peter A. Stern and David Townsend *New Models for Universal Access in Latin America: Summary of Main Report* (Regulatel/World Bank/ECLAC, 2006), 12 www.regulatel.org/miembros/publicaciones/ESTU%20DIOS/SERV%20UNIV/PIIAF/informe%20final/draft%20vf/Ab%20%20Summary%20v%209.pdf

management by government ministries; by purpose-built, even multi-stakeholder, trustee funds; or by dedicated vehicles separate from a regulator. Financing may come directly from government, from spectrum auctions, or from postal, media and courier services.

From the mid-1990s, especially in Latin America, the principle UAF mechanism deployed to achieve universal access has been the lowest-subsidy auction. Through this mechanism, licences to extend services into underserved rural areas are awarded to those seeking the lowest subsidy in a competitive bid. This led in a number of cases to rapid commercial viability of the new services and to significant growth in access. Among the success factors was the selection of target areas using a bottom-up approach. In Chile, for instance, local authorities, community organisations, and telecom companies together submitted lists that were then short-listed by regional authorities.³

However, the extent to which "smart subsidies" can achieve rapid commercial viability for network providers in rural areas falls as remaining underserved areas become progressively poorer and more remote. The positive experience in Latin America was to some degree the result of early underestimation of the demand and willingness to pay for telephony, even among poor people. There is also evidence that ongoing supporting policies, after the initial subsidy, are needed to achieve sustainability, such as asymmetrical interconnection charges⁴ (implemented in Chile, Colombia and Uganda, for example) and continuing firm regulation against anti-competitive behaviour by dominant operators.⁵

The use of UAFs to provide internet access has in most cases proved more commercially challenging, as the service lacks the same degree of pent-up demand and potential income is far less. However, internet provision is now an accepted component of universal access and has spread in some places to including access in schools, NGOs, health centres and other social services.

Recent approaches to universal access are going further. They are, for instance, funding broadband services, experimenting in technology-neutral approaches (eliminating restrictions on technology, such as VoIP, that can be used), and encouraging experimentation in low-cost delivery platforms such as broadband wireless access networks. For instance:

- The government of India reportedly has ambitious plans to use the UAF to roll out free broadband connectivity at a speed of 2 MB per second across the country by 2009, with the goal of boosting economic activity in the country.⁶ It can afford to do so as the country collects 5% of all operators' revenue, among the highest in the world.
- Regulatory permission to use VoIP (voice over internet protocol) in the 30,000 or so *cabinas públicas* telecentres in Peru has been a contributory factor in their success, with about one third of all clients using the service.⁷
- The municipal government of Knysna in South Africa, a coastal town of 50,000, constructed a Wi-Fi-based network, in partnership with a Wi-Fi internet service provider,

³ See for instance Björn Wellenius *Closing the Gap in Access to Rural Communication: Chile 1995–2002* (Washington: World Bank, 2002) www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2002/03/22/000094946_0203070403326/Rendered/PDF/multi0page.pdf and Juan Navas-Sabater, Andrew Dymond and Niina Juntunen *Telecommunications and Information Services for the Poor: Towards a Strategy for Universal Access* (Washington: World Bank, 2002) www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2002/05/03/000094946_02041804225061/Rendered/PDF/multi0page.pdf

⁴ Interconnection charges refer to the amount that different operators pay each other for completing calls. In this case of asymmetrical charges, rural operators pay less to urban operators than vice versa, yielding a surplus.

⁵ Harsha De Silva and Ratna Kaji Tuladhar "Chapter 7: Smart Subsidies – Getting the Conditions Right", in *Diversifying Participation in Network Development: Case Studies and Research from WDR Research Cycle 3* eds. Amy Mahan and William H. Melody (Montevideo: IDRC/infoDev/LIRNE.NET/Comunica, 2007) www.comminit.com/en/node/270757/307; Andrew Dymond *Telecommunications Challenges in Developing Countries: Asymmetrical Interconnection Charges for Rural Areas* (Washington: World Bank, 2004)

⁶ Joji Thomas Philip "Broadband to go free in two years" *The Economic Times* 26 April 2007 economictimes.indiatimes.com/Broadband_to_go_free_in_2_yrs/articleshow/1955351.cms; Ken Wieland "India's TRAI calls for broadband subsidies" *Telecommunications Online* 18 September 2007 www.telecommagazine.com/newsglobe/article.asp?HH_ID=AR_3478

⁷ Stern and Townsend *New Models for Universal Access in Latin America*, 36

that offers voice and data for free on several hundred hotspots.⁸

There is also movement towards making more unlicensed spectrum available. Dedicated licences are now also available in many countries for small-scale local telecom companies to provide the full range of services.

Some continue to argue that liberalisation will, given sufficient time, offer the complete solution to universal access. Exponential growth in mobile phone access across most developing countries adopting a pro-market approach, and even some that did not, offered support to this view. Mobile growth remains strongest in Africa – an annual 39% for the two years to the end of 2007 – and Asia also saw a healthy 28% annual growth during the same period.⁹ Some of the value-added services becoming available on mobiles, such as financial services (“m-banking” or “m-money”) including remittance payments of direct relevance to poor communities and families (successful examples are found in Kenya – almost two million users – Tanzania, South Africa and the Philippines), have also been facilitated, if not actually driven, by policy and regulatory actions.¹⁰

Yet large access gaps remain, especially in poorer, sparsely populated areas. Mobile telephony, despite growing data functionality and applications, still offers limited internet access, usually at tariffs beyond the reach of the poor. The affordability of mobile telephony has not been adequately addressed and its use remains beyond the reach of many poor people even where network access is available. Despite services being available on mobile phones, universal access, some would argue, must in key respects go beyond the market approach to support a public good approach to ICTs.¹¹ Such an approach would argue for widespread affordable internet and ICTs based on the idea that the public good is maximised and most efficiently achieved only if virtually everyone is connected.

A pro-poor approach

A key challenge with universal access policies and regulation is to ensure that they can successfully target poor people and poor communities and are not just benefiting the wealthier sections of what are, overall, relatively poor communities (i.e., that it is not only the better off who can actually afford to utilise the services). From this perspective, a pro-poor approach may be viewed as a convergence between ICT policy and development policy, where the goal is not simply to ensure access to ICTs, or even to render them affordable to the poor, but also to build on the capacity of ICTs to empower poor people and poor communities.¹²

The manner in which poverty is addressed can vary. South Africa, from the earliest days, pioneered telecentres as a means to achieve universal and affordable access for telephony and internet use by the poor, often offering a range of other services. Success was mixed,¹³ but telecentre programmes have become a part of universal access policy in many other countries.

Some initiatives build in features targeted at poverty. In India, the Kerala state’s Akshaya project, launched in 2002,¹⁴ started as a pilot and is now state wide. It aims to build a network of rural community “kiosks” in every village. What is notable in the approach is that the state offers subsidised broadband to social entrepreneurs to set up these centres. The pro-

⁸ For more information see www.ictregulationtoolkit.org/en/PracticeNote.aspx?id=3175

⁹ International Telecommunication Union *Report on the World Summit on the Information Society Stocktaking* (Geneva: ITU, 2008), 3 www.itu.int/wsis/stocktaking/docs/2008/WSIS-Stocktaking2008-e.pdf

¹⁰ See *infoDev* resource page “m-Banking for the poor” at www.infodev.org/en/Project.35.html

¹¹ Pablo Accuosto and Niki Johnson *Financing the Information Society in the South: A Global Public Goods Perspective* (Montevideo: ITeM, 2005) www.choike.org/documentos/wsis/book02.pdf

¹² Seán Ó Siochrú and Bruce Girard *Community-based Networks and Innovative Technologies: New models to serve and empower the poor* (New York: UNDP, 2005) www.propoor-ict.net; see also www.ictregulationtoolkit.org/en/Section.3184.html

¹³ Sarah Parkinson *Telecentres, Access and Development: Experience and Lessons from Uganda and South Africa* (Ottawa: Practical Action Publishing/Fountain/IDRC, 2005) www.idrc.ca/en/ev-87255-201-1-DO_TOPIC.html

¹⁴ For more information see 210.212.236.212/akshaya/online.html and the case study in this toolkit module.

poor mandate derives from a legally sanctioned role of the village elected bodies (*panchayats*) in governing the kiosks, including some influence in setting different tariffs according to need, as well as a requirement that one member of every family in the village is given ICT training.

Other examples following similar principles of community participation and socialised benefits can be found in telephony cooperatives in Argentina and Poland, and the unusual case of a community-owned irrigation board in Peru setting up and running a Wi-Fi based telephony and internet service.¹⁵ Such community-driven networks are intended to build capacity within the community in terms of managing an enterprise, to retain the profits within the community, and to redirect surpluses towards development activities.¹⁶ A detailed discussion on various government-driven, public/private sector and community-based entrepreneurial models can be seen in the Implementing Projects at the Community Level module of this toolkit.

Nigeria, Kenya and Uganda are among countries that have opened regulatory spaces in national policy for these kinds of initiatives. Such small-scale local initiatives may not be inherently pro-poor in nature, but policy and regulatory measures can be taken to encourage and enable them in poor areas, including the participation of poor communities themselves. For instance:

- UAFs can be used as a source of venture capital, filling the gap between micro-credit and bank loans and offering finance to social entrepreneurs and cooperatives.¹⁷
- Asymmetrical access charges can be tailored to benefit not just rural but poor communities; assistance can be given in developing appropriate legal structures.
- Tax incentives can be offered to reinvest in poor communities.¹⁸

A pro-poor approach focuses on the needs of the poor, and these extend beyond ICT access and affordability. Policy measures can help deliver appropriate content and services to address these wider needs. Many poor rural communities are beyond the effective reach of social and public services, and ICTs can facilitate remote delivery, reducing delivery costs in the long term. For example, the National e-Governance Plan in India includes a well-funded programme, already launched, to establish up to 100,000 Common Services Centres (CSCs) in rural areas, seen as front-end delivery platforms for government, private and social services.¹⁹ Small-scale village entrepreneurs and NGOs are contracted to offer the services and establish the centres, charging agreed tariffs. The idea is that subsidies for the provision of key government services will underpin the viability of the centres, enabling them to offer a wider range of services at affordable charges. If this were more firmly linked into a community empowerment approach, the impact could be even greater.²⁰

Affordable access to high-speed internet brings further policy possibilities, both because it allows for the simultaneous provision of a variety of different services and because it supports high-speed broadband services. Areas such as agricultural extension, basic literacy and numeracy, education, disease prevention, hygiene and small business development can all be supported through ICTs, driven by cooperation across different policy domains. The health sector, in particular, can benefit from broadband access, with high-quality video and data transmission linking community health centres with centralised and specialised diagnostic centres. Early diagnosis is often the key to local and effective treatment, and yields major savings both for people and for the health service. Existing universal access policy moves to link health centres and schools to the internet would, with the availability of broadband, come

¹⁵ These case studies can be found in Ó Siochrú and Girard *Community-based Networks and Innovative Technologies*; the latter is also one of the case studies included in the toolkit module on Implementing Projects at the Community Level.

¹⁶ Ian Howard *Unbounded possibilities: Observations on sustaining rural ICTs in Africa* (Montevideo: APC, 2007) www.apc.org/en/system/files/SustainingRuralICTs_0.pdf

¹⁷ Stern and Townsend *New Models for Universal Access in Latin America*, 30

¹⁸ Ó Siochrú and Girard *Community-based Networks and Innovative Technologies*, 46-52

¹⁹ For more information see mit.gov.in/default.aspx?id=825

²⁰ Seán Ó Siochrú "Empowering Communities through ICT Cooperative Enterprises: The Case of India", in *The Political Economy of the Information Society: A Southern View* eds. Parminder Jeet Singh, Anita Gurusurthy and Mridula Swamy (Bangalore: IT for Change, 2008) itforchange.net/media/ISSS/Political_Economy_of_IS.pdf

significantly closer to realising such possibilities.

ICT strategies

A pro-poor policy convergence between universal access and development policy may also in principle be reinforced through the adoption in numerous countries, most still in the process of implementation, of national strategies variously titled ICT strategies, ICT4D strategies or e-strategies.²¹ These give shape and direction to the body of policies and provide a coherent framework for implementation, premised on the idea that the benefits of ICTs are to be achieved horizontally across many sectors and generally encompassing a range of government ministries, institutions and other actors.²² The development of such plans was strongly encouraged from the late 1990s by regional and global entities such as the United Nations Economic Commission for Africa (UNECA), the United Nations Development Programme (UNDP), and the World Summit on the Information Society, and by donors at national level. Most include e-governance measures, sectoral actions in health and education, training and capacity building, support for small and micro businesses, as well as infrastructure and service extension, each of which may contain pro-poor measures.

The impact of such initiatives on poor people is difficult to judge as there have been no systematic evaluations. Few ICT strategies were backed up with funding; a number comprise little more than a collated set of project ideas to be brought before various donors and sectoral ministries. Some fail to prioritise, and indeed a few countries have produced overlapping ICT plans and strategies, each funded by a different donor. Rwanda's NICI 2010 Plan (extended to 2020) is amongst the most ambitious and explicitly places ICTs at the centre of its overall development plan, and therefore attracts a considerable proportion of development funding. India's National e-Governance Plan, mentioned above, is another example.

However, the availability of this scale of funding to implement ICT and e-government strategies is the exception, not the rule; nor was it always the intention. The possibility of reaping indirect benefits was also part of the rationale for such strategies. A goal was to nurture a wider multi-level strategic ICT dialogue between traditional telecommunication ministries and IT institutions, and sectoral ministries in industries, health, education, rural development and so forth; and to involve as much as possible wider stakeholders. Efforts directed at such mainstreaming of ICTs at the policy level can claim some success in a number of countries such as Mozambique.

If the trend now appears to be away from overarching strategies towards sectoral-level policy on ICTs – e-governance, e-health, e-education, etc. – this may reflect a measure of success. Thus strategies that maintained a top-down approach have made little progress, while those that are based on an organic, incremental approach “with a focus on building blocks such as national educational capacity, policy and regulation, infrastructure, content and public sector delivery”²³ have met with more success.

Building out high-speed networks into poor areas

Many policies apart from those explicitly geared towards achieving universal access and poverty alleviation influence affordable access to ICTs.

The lack of optical fibre backbone networks in many countries acts as a bandwidth bottleneck, driving prices beyond the reach especially of poor people and limiting the functionality of the

²¹ See the Advocacy Strategies and Approaches module of this toolkit for an analysis of specific advocacy techniques for implementing pro-poor ICT strategies.

²² Some examples can be tracked at the Communication Initiatives page: www.comminit.com/en/taxonomy/term/308%2C323 and in ITU *Report on the World Summit on the Information Society Stocktaking*. For Asia, examples can be found at www.apdip.int and in Section 4.2 of the abovementioned ITU report.

²³ Lishan Adam *Policies for equitable access* (Montevideo: APC, 2008) www.apc.org/en/pubs/research/openaccess/world/policies-equitable-access

services available. Remote delivery of educational, health and other content-driven services is heavy on bandwidth. Universal access policies aimed at empowerment through supporting, for instance, the emergence of community-driven networks and low-cost broadband wireless access systems also require significant bandwidth. Satellite access, the only option in many poor and rural areas, is very costly, has high latency (i.e., time delay between sender and receiver) and is unreliable in certain weather conditions. Ubiquitous low-cost, reliable, high-speed networks open up opportunities for everyone, but especially for innovative approaches to pro-poor ICT solutions. The paucity of national backbone fibre is particularly evident in Africa, but also affects poorer Asian countries.

Policy deficiencies are to some extent behind the problem.²⁴

The type and extent of liberalisation, overlaid onto existing rigid yet frail telecommunications institutions and fixed-line operators, resulted in shortcomings in the nature of the ICT regimes and services that emerged. For example, the fixed-line network, far from achieving the expected growth, shrank in some countries. This was the result of strategic short-sightedness, policy and institutional hurdles, and unavoidably high initial fixed costs. In much of sub-Saharan Africa and elsewhere, liberalisation reinforced or encouraged vertically integrated operators with end-to-end networks. Although backbone networks are extensive, the majority comprise microwave and satellite owned by mobile operators designed primarily for voice traffic. Furthermore, some governments restrict the types of technologies that can be deployed, and prohibit operators from selling on excess bandwidth capacity. As a result, the prospects for universal broadband are on hold in many developing countries. People in low-income countries, representing 38% of the world's population, currently make up only 1% of the world's fixed broadband subscribers.²⁵

Where the backbone issues have been partially addressed, for instance in Kenya and Nigeria, bandwidth has been freed up and new backbone providers attracted, expanding capacity and reducing prices. In Kenya, the lifting of restrictions on VoIP in 2004 resulted in a fall of almost 80% in the cost of international calls;²⁶ and India expects to see national long-distance call tariffs halved and a fifth off international calls.²⁷ This will benefit many poor people deriving economic and social benefits from contacting relatives and friends abroad. However, such developments tend to be confined to main urbanised centres, where fibre already exists and the best market opportunities arise. Market incentives alone, even with supportive regulation, are unlikely to deliver the investment needed for broadband access in more rural areas.

The policy and regulatory question is how to get high-speed backbone into rural areas and how to ensure it addresses the needs of the poor. Here additional action is needed, and some have been attempted.²⁸

- A least-cost subsidy competition can be held, including fixed price and quality of service terms, which can also include public/private partnerships, examples of which can be found in France and Singapore.
- The private sector can be given other incentives to build a network, such as concessions on contributions to a universal access fund in the case of Brazil.
- A consortium can be formed, by public and/or private actors, to build and operate a subsidised backbone network, selling services on a cost-oriented basis with full transparency; the Eastern Africa Submarine Cable System (EASSy) cable in is an example of this.

A crucial factor in the success of these is the implementation of an "open access" approach whereby all players (including at local level) can connect into a technology-neutral

²⁴ Mark Williams *Broadband for Africa: Policy for Promoting the Development of Backbone Networks* (Washington: infoDev/World Bank, 2008) www.infodev.org/en/Publication.526.html

²⁵ ITU *Report on the World Summit on the Information Society Stocktaking*, 4

²⁶ See the Catalysing Access to ICT in Africa (CATIA) project report at www.gamos.org/icts/catia-catalysing-access-to-ict-in-africa.html

²⁷ Business Standard "Ease norms for internet calls, TRAI tells government" *Business Standard* 19 August 2008 www.business-standard.com/india/storypage.php?autono=331865

²⁸ Williams *Broadband for Africa*

environment, at cost-based non-discriminatory charges with the subsidy ensuring they are affordable.

Maintaining strong regulatory or public control over service price and quality and applying positive discriminatory measures are critical to ensure that benefits reach poor communities. This suggests that the third model above might be most effective, with a strong role for public interests. The consortium could comprise a number of public entities active in the area with communication needs, such as educational and health institutions. Indeed the government and public services could become an "anchor tenant", underpinning viability by guaranteed purchase of a significant proportion of available bandwidth in the context of the implementation of wider e-governance strategies.

India, on the other hand, offers an example of a nationally owned incumbent carrier, BSNL, recently building a modern and extensive rural fibre network. According to one Ministry of IT official, every village in India is within 25 kilometres of an optical fibre cable.²⁹ BSNL owns the great majority of the backbone and is pursuing an ambitious policy of laying fibre to every exchange in the country, giving extensive rural coverage (though currently it is hugely underutilised). At the same time, it is obliged to sell backbone leased lines on a regulated basis – though not perhaps as much as it might.³⁰ This reinforces that a key factor in success is firm regulation of BSNL regarding cost-based prices and quality of service.

Shared infrastructure

An additional policy dimension can be added, depending on the local conditions, to encourage, enable or even mandate the sharing of components of national infrastructure. Sharing can be of "passive" (physical) infrastructure, or of "active" (fibre or other medium) infrastructure.³¹ A key goal in relation to rural access is to reduce the capital cost, and sometimes the current cost, of both passive and active components, thereby enabling network extension beyond where it is otherwise commercially feasible.

In new-build situations, the legal and financial costs of obtaining common rights of way can be shared between communication, electricity, railways, highways and other infrastructure suppliers. Poles, ducts and power supplies can also be used for multiple purposes. As early as 1999, Brazil's three regulatory agencies, for telecoms, electricity and oil, decided to specify a common regulatory framework for sharing infrastructure. In Cameroon and Nigeria, several utilities have been put under the telecoms regulator, facilitating measures ranging from mandatory sharing of passive infrastructure to financial incentives and guidelines. The newly created regulator in Lebanon has similarly declared its intention to promote passive infrastructure sharing in areas where multiple operators cannot viably build infrastructure and where environmental or social concerns are particularly important.³² Network sharing between mobile phone operators of masts, power, physical space and cabling is encouraged in India and elsewhere,³³ and the Indian regulator policy recommendations include financial incentives such as tax exemptions and licence subventions.³⁴

There are also several approaches to sharing active infrastructure, usually fibre capacity, depending on the circumstances. Some countries have regulated for the wholesale or retail

²⁹ See slide 13 of a presentation by an IT ministry official at www.cu.ipv6tf.org/casos/mcit-ipv6-2004.pdf

³⁰ Harsha Vardhana Singh and Rohan Samarajiva "Chapter 7: One Backbone, or Two?", in *ICT Infrastructure in Emerging Asia: Policy and Regulatory Roadblocks* eds. Rohan Samarajiva and Ayesha Zainudeen (New Delhi: LIRNEasia/IDRC/SAGE Publications, 2008) www.idrc.ca/openebooks/378-2

³¹ Susan Schorr "What Do We Mean by '6 Degrees of Sharing'?" (discussion paper presented at the International Telecommunication Union [ITU] 8th Global Symposium for Regulators, Pattaya, Thailand, 11-13 March 2008) www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/papers.html

³² Tracey Cohen and Russell Southwood "Extending Open Access to National Fibre Backbones in Developing Countries" (work in progress, presented for discussion at the International Telecommunication Union [ITU] 8th Global Symposium for Regulators, Pattaya, Thailand, 11-13 March 2008) www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/discussion_papers/Cohen_Southwood_web.pdf

³³ Camila Borba Lefèvre "Mobile Sharing" (discussion paper presented at the International Telecommunication Union [ITU] 8th Global Symposium for Regulators, Pattaya, Thailand, 11-13 March 2008) www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR08/documents_presentations/Session_4_Borba-Lefevre_1.pdf

³⁴ Cohen and Southwood "Extending Open Access to National Fibre Backbones in Developing Countries", Box 4

use of fibre owned by electricity and railway companies, or the multiple use of fibre along existing and new electricity (Ecuador, El Salvador, Kenya, Tanzania) and train (Ghana) network lines. A transnational example is the Cameroon-Chad oil pipeline, where twelve of the eighteen fibre cables installed will be available for use by telecoms operators, traversing many rural areas.³⁵

There is, however, some resistance to sharing common infrastructure. Concerns include that commercially sensitive knowledge will become available to competitors in the case of mobile operators sharing elements of active infrastructure; or that forced sharing will facilitate direct competition in a core area of business. But the incentive of considerable gains has led to solutions being found around these issues. In Tanzania, for instance, a neutral partner carrier in the form of an equipment vendor manages shared active infrastructure for several operators in what might otherwise be marginal rural areas, thereby avoiding the issue of commercially sensitive information.³⁶

Open standards, open hardware, open source, open spectrum

Open standards are about enabling all communication technologies – and people – to interact with each other by recognising and adopting common standards. Open hardware means the public availability of technical specifications of ICT equipment. Open source is the term for software that makes its “source code” freely available to all, thus allowing programmes to be tailored to local needs and giving birth to a global community of software engineers helping each other out; free and open source software (FOSS) is the wider movement that also emphasises the availability of software for free. Open spectrum is essentially making wireless bandwidth available without the need for a licence.³⁷

Together they can facilitate a pro-development approach and, particularly in a local context, pro-poor aspects can emerge. Open standards can help to avoid vendor “lock-in” where customers are obliged to stick with the same equipment, ensuring that all equipment can interconnect. This allows for greater customer choice, including the choice of local equipment. Open hardware facilitates small-scale manufacture and assembling of hardware locally, to suit local conditions and needs and generate employment. A major policy lever in relation to open standards and open hardware is government procurement policy for government services.

Open source not only saves money, but in the right circumstances can help build up local software skills. The success of Wi-Fi at the local level, where it has been deployed by poor communities to build their own networks, can in part be attributed to the emergence of a Wi-Fi open source community enabling new business models to emerge.³⁸ Open spectrum policies have been at the root of the Wi-Fi revolution, greatly simplifying the bureaucratic barriers involved in legally accessing spectrum and eliminating licence fees.

The potential and actual benefits of FOSS for development in general have been widely documented,³⁹ though the subject will undoubtedly remain hotly contested given the power, resources and massive user platform of commercial software companies, notably Microsoft. Quite a number of countries and regions are implementing policies to support FOSS, as part of a development approach or sometimes integrated within ICT strategies, from Brazil and Venezuela to the Indian state of Kerala. The last is in the process of setting up an International Centre for Free and Open Source Software with wide-ranging functions to support and implement FOSS.⁴⁰ Ecuador joined the list in May 2008, when the president

³⁵ Ibid. Box 3

³⁶ Ibid. 10

³⁷ Alberto Escudero-Pascual *Tools and technologies for equitable access* (Montevideo: APC, 2008) www.apc.org/en/system/files/APC_EquitableAccess_ToolsAndTechnologies_IssuePaper_20080730.pdf

³⁸ Steve Song *A Commentary on Tools and Technologies for Equitable Access* (Montevideo: APC, 2008) www.apc.org/en/system/files/APC_EquitableAccess_ToolsAndTechnologies_CommentarySong_20080728.pdf

³⁹ For case studies see Nah Soo Hoe *Breaking Barriers: The Potential of Free and Open Source Software for Sustainable Human Development. A Compilation of Case Studies from Across the World* (Bangkok: UNDP-APDIP, 2006) www.apdip.net/publications/ict4d/BreakingBarriers.pdf

⁴⁰ S. Anandan “Free software centre likely by December” *The Hindu* 2 August 2008 www.hindu.com/2008/08/02/stories/2008080253780400.htm

issued a decree that establishes, with few exceptions, the mandatory use of FOSS in the public administration and institutions, and pilots are underway in two ministries. The case is interesting as these measures anticipated the proposed new constitution, finally adopted in October 2008, which includes an explicit commitment to the right to universal access to ICTs.

Broadcasting policy and regulation

Radio and television are sometimes thought of as technologies of the past. Yet they continue to evolve and change and exert major influence, sometimes in new areas. They can be technologically innovative, and are increasingly intertwined with their telecommunication and internet-based cousins. Apart from their economic role, the fact that most countries retain relatively strict regulation – and sometimes direct government control – in an era of deregulation is testimony to how important these media are in political and cultural spheres. Broadcasting globally is by far the dominant means by which people receive information from outside⁴¹ and, most importantly, this is especially true in poor and remote communities.

Broadcasting, if properly regulated, has the potential to give voice to poor communities, opening a door to wider influence in society's structures and institutions. Yet broadcasting is too often neglected in current ICT policies and strategies, and its pro-poor potential lies largely dormant.

The growth in the past decade in community radio– the cheapest and most accessible of all ICTs – is probably the most striking feature of the sector. Every continent has been affected. In Africa, from Mali to Cameroon, Senegal to the Democratic Republic of Congo, through Togo, Benin, Cote d'Ivoire, Gabon, Guinea, Niger and Chad, all have witnessed an explosion of community radio stations to the extent that their numbers now run into the thousands. Latin America has a history of community radio dating back over half a century, in the beginning outside the law, but in recent years Bolivia, Colombia, Peru, Venezuela, Mexico and Argentina, amongst others, have developed policy and are regulating the sector. The experience in Asia is more recent, but Bangladesh, Nepal, Thailand, India and Indonesia now give out radio licences to communities.

However, the policy and regulatory processes that have accompanied this flowering of stations is highly uneven, and whether the future will live up to its undoubted pro-poor potential is uncertain.

Nepal is a case in point, illustrating some of the risks. Community stations played a key role in the restoration of democracy to Nepal and, partly in reward, the new government "fast-tracked" applicants for new licences. Dozens were granted within weeks, with more applicants joining the queue all the time. Yet the licence does not distinguish between commercial and community stations and both have to pay a 4% tax on income and a significant annual broadcasting levy. There are also few regulatory protections to ensure that the public interest is kept to the fore. In this circumstance, commercial stations are consolidating their base and crowding out the community stations; and politicians and political parties can manipulate channels for propaganda.⁴²

Television is also growing as a medium in poor communities. However, community television, because of the higher costs and wider set of skills required, has had little impact so far, with the possible exception of a couple of Latin American countries. But there has been a major shift in policy and regulation in the last decade. A pronounced decline in direct government control of broadcasting is evident, including television, especially in Africa and to a lesser extent in Latin America and parts of Asia.⁴³ Taking its place, however, is the emergence of sometimes unregulated commercial television, often tacitly supporting the government and intent on maximising profits. At the same time, the publicly held aspiration of many of these

⁴¹ Steve Buckley et al. *Broadcasting, Voice and Accountability: A Public Interest Approach to Policy, Law and Regulation* (Ann Arbor: World Bank Institute and University of Michigan Press, 2008), 31-33 www.digitalculture.org/broadcasting.html

⁴² Kunda Dixit "The Rescuing of Democracy", in *Fighting Poverty: Utilising Community Radio in a Digital Age* (Montreal: AMARC, 2008 www.amarc.org/wccd/index.php)

⁴³ Buckley et al. *Broadcasting, Voice and Accountability*, 69

governments is quite the reverse: to promote public interest television.

The creation of a policy and regulatory environment in broadcasting that focuses above all else on the public interest has the potential of being a central plank of a wider pro-poor agenda. The challenges are significant:

- The temptation for governments to influence broadcasting directly – or indirectly through implicit or explicit collusion with commercial or other sectional interests – is strong.
- Ensuring adequate funding and independence of sources for public service media is difficult, especially in poor economies.
- Creating the conditions for a viable community media sector remains a challenge.

The challenge for regulatory bodies

In 1995, just 43 countries had established national regulatory authorities for telecommunications. By the year 2000 this figure had risen to 106, and in 2008 it stood at 149.⁴⁴

However, even with enlightened and innovative policy and regulation on the statutes, effective regulatory implementation confronts a number of serious challenges. Perhaps chief among these are the limitations in capacity in regulatory bodies, many of them recently established in a radically altered policy environment. Not only must new skills be found and institutionally embedded, but they often quickly confront highly resourced private sector operators with decades of experience in thwarting the best efforts of regulators. Asymmetries of information – for instance, around pricing – between the regulator and regulated are difficult to overcome in the best of circumstances,⁴⁵ and regulatory “capture” is common. Gaining independence and credibility involves a complex interaction, and must be earned over time by the actions of the regulator and the reactions of the government, the incumbent and the courts.⁴⁶

One trend in this regard is also worthy of mention: the emergence and expanding roles of regional associations of regulatory bodies. Examples include the Communications Regulators’ Association of Southern Africa (CRASA) in Southern Africa and Regulatel in Latin America. In other cases, cooperation takes place under wider regional political alliances, such as the Association of Southeast Asian Nations (ASEAN) and the Economic Community of West African States (ECOWAS). Their agenda initially includes formulating regional policies, research and sharing of experiences and capacity. ECOWAS in 2007 adopted an agreement that covers ICT policy, the legal regime, interconnection, numbering, spectrum management and universal access.

3 Strategic policy and regulatory options

The experience and trends outlined offer a number of policy and regulatory options with the potential to alleviate poverty and contribute to empowerment, some more tested than others.

1. Extending network and service access more deeply into poorer and more remote areas may be possible through a range of additions and variations on the basic lowest-subsidy auction model:
 - a) Allowing the use of technology-neutral solutions and supporting a degree of experimentation in low-cost technologies suitable for dispersed populations and remote and difficult terrain – even where these are prohibited nationally – can

⁴⁴ ITU *Report on the World Summit on the Information Society Stocktaking*, Table 4

⁴⁵ Alison Gillwald and Christoph Stork *Towards an African e-Index: ICT access and usage across 16 African countries* (Johannesburg: LINK Centre, Witwatersrand University, 2006) www.researchictafrica.net/images/upload/Cairo.pdf

⁴⁶ Amy Mahan and William H. Melody, eds. *Stimulating Investment in Network Development: Roles for Regulators: Case studies and research from WDR Research Cycle 2* (Montevideo: IDRC/infoDev/LIRNE.NET, 2005) www.infodev.org/en/Publication.12.html7

reduce costs, in some cases dramatically.

- b) Making unlicensed spectrum available in the appropriate GHz bands.
 - c) Sustainability and/or affordability can be enhanced through allowing asymmetrical interconnection charges, even beyond that justified by cost differences, as an ongoing subsidy to the poorer community.
2. UAFs and policy can also be deployed to support wider development goals, through measures to promote employment creation and capacity building:
- a) Licensing and supporting small-scale local and cooperative enterprises offering a range of services including telephony, internet and others can generate local employment and enhance skills.
 - a) UAFs may be used to provide access to credit, equity capital or grants to micro-enterprise retail phone providers along the Grameen phone model, or more ambitiously to licensed local cooperative enterprises as above.
 - b) Where available, subsidised bandwidth is an option as a support for community social enterprises.
 - c) Support for both internet access and content development could be given, in the areas of education, health, NGOs/CBOs and development activities, working in close collaboration with community interests.
 - d) The UAF could support the setting up of community radio stations: a community radio channel can be built and equipped for less than the cost of a single tower of a single mobile telephone network,⁴⁷ and priority could be given to pro-poor communities in licensing.

Given the trend towards including wide-ranging actions under universal service policy and regulation, it has been credibly suggested that the concept of the UAF should be superseded altogether with that of the Universal Communication Fund.⁴⁸ Such a fund would be given greater flexibility in terms of the forms and goals of funding, adopting a "bottom-up" approach to supporting community and local enterprise in poor areas, and in moving some services from universal access to universal service. Such a broader role would, in most countries, quickly run up against the capacity limitations of policy makers and regulators, but may be ripe for consideration in some situations.

3. The limited availability of broadband backbone, especially fibre, in rural areas can be addressed through a number of regulatory measures, depending on the circumstances:
- a) Regulating to oblige operators to share or sell spare backbone capacity may be an option, including for instance mobile backhaul.
 - b) Regulating to promote and facilitate passive and active infrastructure and facilities sharing, such as rights of way, pilots and masts and pipelines, as well as fibre and wireless facilities.
 - c) Introducing "open-access" regulation of existing and new fibre, and opening the market for a diversity of small, medium and large value-added services.
 - d) Offering policy support, depending on the circumstances, for the creation of public policy-driven consortia to build fibre, including public investment.
4. E-governance and ICT strategies could be coordinated more closely with both development and universal access policies. The use of ICTs to provide e-government services in remote areas can generate demand for bandwidth that can be aggregated with other local users to bring down costs. These services can be coordinated with support for community cooperative ICT-based enterprises.

⁴⁷ Bruce Girard "Community Radio, New Technologies and Policy", in *Fighting Poverty: Utilising Community Radio in a Digital Age* (Montreal: AMARC, 2008), www.amarc.org/wccd/index.php

⁴⁸ Stern and Townsend *New Models for Universal Access in Latin America*, 43

5. Open standards, open hardware, open source and open spectrum are each in their own way, and in various combinations, capable of reducing costs, supporting capacity building, and helping to tailor service provision to the needs of poor communities. Policy can play a significant role in encouraging these approaches, for instance through procurement and guidelines, and in more active policy decision to favour their implementation.
6. Broadcasting, both radio and television, can enable poor and marginalised communities to have a voice in the public sphere and gain influence on policy more widely if policy and regulation are specifically designed and implemented towards that end. Evidence suggests that an appropriate balance between commercial, community and public service broadcasting can achieve this. Such an approach covers a vast area of law, regulation and policy. Movement towards such a system must ultimately help to address issues of poverty and exclusion, particularly through the community sector.

Increasing the take of the universal access fund through, for instance, raising the percentage contribution should, if the money is spent wisely, ultimately benefit the poor, although care must be taken not to undermine mainstream ICT activities. Broadening the scope of those contributing might be possible, for instance to include courier, broadcasting and other communication-related sectors, where these are stable and profitable.

However, lack of funding is not always the issue and there are cases in which finding useful ways to dispose of funds collected is the greater challenge, bringing back up the issue of capacity. Fundamental to building capacity in many cases is the need for firm government support and determination that the regulator will become independent, capable and authoritative.

4. Case Studies

Three case studies have been provided for this module as well as a list of additional resource material. The policy and regulation case studies are outlined below:

Project	Project description	Highlights
Providing Universal Access: FITEL, Peru	This programme provides mechanisms for minimising the subsidy required for commercial telecoms companies to extend the network into non-commercial areas by awarding the contract to the bidder seeking the lowest subsidy	FITEL in Peru offers an early and successful example of a universal access fund adopting an innovative approach to achieving access in rural areas, now widely replicated: the lowest-subsidy auction. Despite shortcomings, this pioneering programme brought various social benefits, and activities have since expanded from public telephony to include internet access.
Rural Broadband Backbone: A case study of different approaches and potential	A look at different approaches to extending fibre backbone into rural areas	This case study lists various options for the provision of rural broadband backbone, from direct investment by a government-owned operator (as in India), to the provision of "open access" fibre backbone through a public/private consortium (as proposed in parts of Africa), to mechanisms that encourage infrastructure sharing and build complementary infrastructure.

Digital Inclusion Policies: Some lessons from India	A review of digital inclusion policy in India, particularly the Common Services Centres (CSC) scheme of the National e-Governance Plan	This case study looks at a range of digital inclusion initiatives in India. It includes an analysis of the challenges faced by the CSC scheme in ensuring the delivery of development services in a socially inclusive manner using the ICT-based rural infrastructure it is building.
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There are case studies in other modules of this toolkit which are relevant to policy and regulation:

Project	Project description	Highlights
Using Mobile Networks for Low-Cost Data Exchange: The Mozambique Health Information Network (MHIN)	Health workers use mobile networks and PDAs to implement government commitments to provide affordable health services to communities	The use of ICTs by the Ministry of Health in Mozambique to deliver a wider development (health) objective is an example of mainstreaming ICTs across development sectors.

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