Universal Access: an overview

This module explores key aspects of universal access and service (UAS) for information and communication technologies (ICTs). The value and importance of ICTs cuts across all other sectors of the economy. ICTs are recognized as a pillar of modern society, as no other sector seems to work efficiently without them. Diverse sectors such as governance, education, health, business, finance and tourism are critically dependent upon information and communications. Also, no country, irrespective of its economic status, can ignore the trend towards ubiquitous use of ICTs. This is why the term enabler is often used to describe ICTs.

This module is structured as follows:

- **Chapter 1** is an introduction to UAS;
- **Chapter 2** gives an overview of regulatory reform which is the first vital step of increasing UAS using market mechanisms and good regulation;
- **Chapter 3** introduces the main approaches and specific UAS instruments, policies and interventions that policy-makers and regulators can use beyond sector reform;
- **Chapter 4** discusses details of UAS policy development, its framework and process;
- **Chapter 5** explains financing issues related to UAS and financial analyses;
- **Chapter 6** outlines details of UAS programme development and economic analysis, in particular for project prioritization;
- **Chapter 7** describes the competition process of awarding subsidies for the provision of UAS by operators and service providers; and;
- **Chapter 8** gives an overview of technology issues and trends that are particular relevant for UAS.

Chapter 1 provides information that is critical to understanding the basic concepts of universal access (UA) and universal service (US), the progress being made towards UAS internationally, the rationale behind UAS policy, international trends and developments, and integration of UAS for ICTs with other national policies and programmes.

Origins of universal service

Historically, the term and concept of US existed before UA. US for telephone service, first mentioned in the 1934 Communications Act of the United States, describes the concept of affordability of telephone services, as well as its universal availability for households desiring that service. UA is focussed on public, community or shared access to telecommunications.

US only came to the forefront with the advent of market liberalization and sector reform. For example, specific aims for serving all reasonable demands for basic telephony service were formulated in 1984 with British Telecom's privatization. Prior to that, affordable service for all was an implicit obligation by the management of the state-owned enterprise, similar to the situation in many other countries.

Market liberalization and competition triggered a debate on US, surrounding the key questions of how to achieve it in a deregulated environment, how much US costs, and who shall bear the costs. The debate distinguished between the goal of US and the means of achieving it, while acknowledging that telephone service is an important basic right, essential for social cohesion and economic development. Since then, tremendous strides have been made towards achieving US and in many countries it is a reality.

Universal service and access today

The concepts of US and UA to telecommunications and ICT are distinct. US refers to service at the individual or household level, e.g., typically a telephone in each home. UA refers to a publicly shared level of service, e.g., through public payphones or Internet telecentres. However, they are also intrinsically linked to each other, as UA is the pre-cursor for US.

In the past, developing countries typically focussed mostly on universal access (UA), meaning community and publicly shared access, as UA was the appropriate and most feasible target. However, since the maturation of mobile communications, which extended services further and lowered access barriers to take up, many developing countries might realistically target US for telephony in urban areas. And also, in addition to setting UA targets for rural areas, the objective of increasing rural penetration can be set.

ICTs include both telephony and Internet, and some countries are at the stage where they have achieved UA to telephony and their goal is to achieve US, while in the Internet realm their goal is UA. Thus, their policy is no longer solely focussed on UA but on both UA and US.

In the more developed world which previously had US policy goals, the onset of broadband has led to re-use of the term UA. It is often recognized that universal availability of broadband services may not necessarily yield universal service-like household penetration for many reasons, though the provision of affordable access is an important goal.

As the reality in more and more countries relates to both UA and US, it makes sense to use the generic term universal access and service (UAS).

Thus, this module of the toolkit will refer to both terms with a focus on addressing UAS in the context of developing countries and emerging markets, while also drawing on best practice and experience in the developed world.

Scope of universal access and service

While US was once reserved for basic voice communications, UAS policies and strategies go beyond telephony, and include at least data and Internet communications, and increasingly look towards broadband communication. Traditionally, broadcasting has not been a part of UAS, but is now regarded as part of ICTs, in particular as the underlying technologies and delivery mechanism between telecommunications and broadcasting are converging. First models of how to include broadcasting in UAS policies are explored. However, media laws and policies have fundamentally different requirements which go beyond affordable access and service. Their focus is on a diversity of content providers, quality content development, pluralism and independent news reporting, choice and media freedom, and media ethics and control against illegal and harmful media content. These content elements have traditionally not been part of UAS for telecommunications. As a consequence, developing UAS requirements for broadcasting is breaking new ground.

Increasingly, UAS policy needs to be as forward-looking as possible and include broadband developments, the move towards a next-generation network (NGN) environment and address issues of convergence. The future challenges for policymakers are how to address the increased requirements and complexities of UAS while at the same time having UAS policies and programmes that achieve their goals quickly and efficiently. This Toolkit is intended to inform and support policymakers and UAS policy implementers to meet this challenge.

Reference Documents

- **Universal Access & Service (UAS) and Broadband Development**

4.1.1 CONCEPTS OF UNIVERSAL ACCESS

For ICTs, UA and US can largely be characterized by the availability, accessibility and affordability of telephony and the Internet, with increasing consideration of the inclusion of broadband and broadcasting. These terms, as used in this toolkit, are found in **Section 1.1.1**. Typically targets for universal access and service (UAS) in developing countries relate to telephony and the Internet. How these targets can be selected and related to indicators of development is described in **Section 1.1.2**. A more general discussion of extending targets to communications capabilities is discussed in **Section 1.1.6**.Technological developments, liberalization, improved sector regulation, and enlightened import duty and tax regimes let network infrastructure and service provision be expanded at lower costs and with better quality than before. However, these developments make it necessary to continually monitor the scope and status of UAS and to make sure that all members of society can benefit from them. In fact, as outlined in **Section 1.1.3**, the scope of UAS tends to broaden: because of the developments in technology and society it often includes not just telephony and Internet, but special services based on telephony, and also the Internet in one form or another. A method for choosing which services to include in the scope of UAS, is suggested in **Section 1.1.4**. Developments in the ICT sector and changing UAS requirements impact the debate on required regulatory intervention, as discussed in **Section 1.1.7**. The question of how to target groups for special assistance, if and when it is appropriate, is discussed in **Section 1.1.5**.

4.1.1.1 BASIC DEFINITIONS

This toolkit uses the following definitions in regards to communications services:

- **Universal access (UA)** is when **everyone can access the service somewhere, at a public place, thus also called public, community or shared access**. How many points of access are needed is discussed in **Section 1.1.2**. In general there would be at least one point of access per settlement over a certain population size.
- **Universal service (US)** describes when **every individual or household can have service, using it privately, either at home or increasingly carried with the individual through wireless devices**. For some services, a goal of full US would be too ambitious at present in a developing country, because the services must be affordable as well as available. Goals may relate to the proportion of the population that can afford private service (i.e., subscriber penetration targets).

The three hallmarks of UA and US are:

- **Availability**: the service is available to inhabited parts of the country through public, community, shared or personal devices;
- **Accessibility**: all citizens can use the service, regardless of location, gender, disabilities and other personal characteristics; and
- **Affordability**: the service is affordable to all citizens.

These three aspects are relevant to both UA and US, but in different ways and to different degrees. The table below illustrates UA/US similarities and differences: the essential characteristics are *in italics*, while desirable characteristics are not.

Aspect	Universal Access	Universal Service
Availability	Focused coverage	Blanket coverage
	Public access (e.g. at a payphone or telecentre)	Private service on demand
	Free emergency calls	Free emergency calls
Accessibility	Walking distance, convenient locations and hours	Simple and speedy subscription
	Inclusively designed premises (e.g. for wheelchair users); inclusively designed terminals or available assistance (e.g. for the blind or deaf)	Inclusively designed terminals and services (e.g. for blind or deaf people)
	Assistance from an attendant	Assistance through the terminal (e.g. by making calls or viewing help pages for the web)
	Adequate Quality of Service (e.g. having few failed call attempts)	Reasonable Quality of Service (e.g. having few dropped calls)
Affordability	Options of cash and card payment	Cost of average monthly usage is a small percentage of monthly GNI per capita.
	Options of cash and card payment	Options of cash, card and electronic payment
	Payment per use (e.g. for a single call or message or an hour of Internet access)	Flat rate, bundles of services or low monthly subscription fee

The following concepts are the steps in the progression of UA to US:

- Universal access: Every person has affordable and reasonable public access to defined ICT services considered essential for social inclusion and economic development;
- Universal geographic coverage: 100 per cent of the population living in population centres above a certain size can obtain a defined ICT service provided that the user has the ability to pay for the service; and
- Universal service: 100 per cent of individuals or households can afford ICT services categorized as part of US, and a majority of the population subscribes to these services.

The concepts of UA and US are applicable to the following ICT services:

- Telephony (voice calls and text messages), offering one-to-one communication as well as content distribution to a wider group. Text messages are often also significant for UAS, because the affordability of text messages outweighs the inconvenience of using mobile phone keypads and displays.
- Narrowband and broadband Internet, providing e-mail, live-chats, web-browsing, content distribution, Voice Over IP (VoIP) and IP Television (IPTV), among many other applications and services. Many countries also want UA to the

Internet however his requires higher levels of skill and education than with broadcasting or telephony. Therefore, accessibility through instruction and assistance and content that is useful and appealing is particularly important.

- Radio and television broadcasting. While broadcasting has traditionally not been a part of UAS policies, it is increasingly being considered, due to the convergence of technologies and triple-play offers by service providers (e.g., cable TV operators also providing telephone and Internet services). UAS policies exploring the inclusion of broadcasting are emerging. This is especially the case in countries that have adopted a multi-sector regulator overseeing both telecommunications and broadcasting.

4.1.1.2 UNIVERSAL ACCESS AND SERVICE TARGETS

Universal access and service (UAS) measures are usually targeted at rural areas that are unserved or underserved, and especially low-population density areas where provision of services is not viable. But UAS targets can also be focussed on very poor urban areas in large metropolitan cities, including slums.Developing countries typically set the following universal access (UA) targets:

- A public phone for a certain size of community (e.g., for all communities larger than 2000 inhabitants);
- A limited walking distance to a public phone (e.g., 5 km for communities too small to have their own public phone);
- An Internet POP in districts centres, provincial capitals or towns above a certain size (e.g., above 20,000 inhabitants) that provides either high-speed or broadband capacity; and
- A public access Internet centre accompanying the Internet POP.

Increasingly, modest universal service-like targets are included in developing countries policies, such as:

- An overall telephony subscriber penetration of 20 per cent and a rural penetration target of 10 per cent within a specific time frame (e.g., by 2010); and
- Asking operators to provide a tariff option that allows households in the lowest income decile (10 per cent) a minimum or modest use.

To be useful, targets need to have the following characteristics:

- Targets should focus on needs that have clear indicators and high priorities so that efforts are not spread too thinly among too many targets;
- Targets should be designed to look ahead three to five years;
- Targets should be ambitious but realistic in the light of a country's actual situation;
- Targets should be reviewed regularly (e.g., every two or three years) to remain ambitious but realistic; and
- Targets should be objectively measurable, so that progress can be assessed.

Ideally, targets should be in line with the goals set by the World Summit on the Information Society (WSIS) process in support of the Millennium Development Goals (MDGs). These are discussed in **Section 1.5.1**. The recommendations from the Economic Community of West African States (ECOWAS) [**1**] cite an example of specific goals set on a regional basis by regulators. While providing global and regional guidance, simply adopting general recommendations might not work for individual countries. The specific needs of each country will determine UAS goals and benchmarks. One country might set a feasible target of having a public phone in every community with more than 200 inhabitants for example, while another, such as Uganda, might wish to set a target of having one public phone for 2500 inhabitants. The same applies to Internet related targets and broadband. Once achieved, new UAS targets can be set for the next phase of UAS. Thus, UAS targets for a particular country can be developed using the following general criteria:

- The current state of the sector and current levels of UA in the country;
- The resources available and required for achieving UA targets;
- Financial sustainability after implementation;
- The feasible quality of service (for uniform quality countrywide); and
- Planned periodic reviews in light of technological and market developments.

The UN Partnership on Measuring ICT for Development, set up after WSIS, established and defined a detailed set of forty core indicators, listed in *Partnership on Measuring ICT for Development: Core ICT Indicators* [**2**]. All countries that adopt these forty indicators are able to compare their status and progress to other countries'. For individual countries, these indicators are most valuable on a disaggregated basis so that the situation in different parts of the country or for different population

groups is made clear.

Practice Notes

- **Finland defines “universal service” to include 1 Mbit internet connection**

4.1.1.3 THE SCOPE OF UNIVERSAL ACCESS AND SERVICE

The scope of universal access and service (UAS) always includes telephony and the Internet, and increasingly broadband. In June 2009, France's highest court went as far as to declare that access to the Internet is a human right. In October 2009, the Finnish Ministry of Transport and Communications issued a decree that amended the definition of "universal service" to include access to a 1 MBit internet connection, in other words, access to a broadband Internet connection.

Radio and television broadcasting has traditionally not been included in UAS, but this is changing rapidly due to developments such as convergence, Internet broadcasting and broadcasters also offering Internet and telephony services (e.g., cable TV operators). Broadcasting policies and regulation typically have coverage requirements, though without specifics about actual access, whether by public means or for private subscribers. The scope of UAS is often specified in detail to ensure that it is fit for purpose. It needs to be accessible and affordable as well as available. Features of UAS that might be specified include the following:

- Times of day when there is access to the service;
- Type of shelter for the terminals (e.g. secure building for a telecentre);
- Access to and usability of the terminal for people with physical disabilities;
- Convenience and pleasantness of location for all target groups of users (e.g., women might not wish to enter a bar to use a service);
- Quality of service (network reliability, fault repair times and call quality for telephony and prescribed down and upstream data rates for the Internet service).
- Payment methods (e.g., cash or prepaid cards) and for prepaid cards, availability of sales outlets; and
- Personal support for using the services.

Other services that are entering UAS policies include:

- Directories and directory enquiry services;
- Support services for Internet subscribers (e.g. help-lines, training);
- Emergency call answering facilities (dispatch of help for emergencies); and
- Special facilities to permit use by people with disabilities on par with all other facilities.

While mobile phones are now widely accepted as a way of providing telephony, and are also used to provide public access, and countries like France and Australia use their universal service policies to provide mobile coverage in rural areas, their inherent value of mobility has not, to date, been included in any countries’ US definition. In Mexico, for example, there are both market and legal obstacles standing in the way of this step even though it has been suggested that wireless telephony has become the new norm. Including mobile services in US obligations is considered of national benefit by fostering UA to the Internet, as latest networks have data capabilities allowing basic Internet access [*].Similarly, although text messages are popular and strongly appeal to poor people because of their relatively low and fixed (per message) price, they are not yet required in US obligations (USOs). However, text messages are sometimes required to be included in UA obligations, where public phones are operated by people (e.g. village phones) who can help users with texting. The scenario of excluding text messages from US policy could change specifically for services geared towards people with disabilities (e.g., the hearing impaired will use text messages but not voice calls).

Practice Notes

- **Finland defines “universal service” to include 1 Mbit internet connection**

4.1.1.4 CHOOSING SERVICES FOR INCLUSION IN THE UNIVERSAL ACCESS AND SERVICE SCOPE

The services to be included in the scope of universal and service access (UAS) will change as technology and society change. Because of this, in 2002, the European Union (EU) built into the EU Universal Service Directive a requirement that the scope of universal service (US) obligations be reviewed every three years. To be included in the scope of a UAS policy, a

service has to satisfy two tests:

- In the light of social, economic and technological developments, has the ability to use the service become essential for social inclusion; and
- Are normal commercial forces unable to make the service available for all to use?

The scope of US in the EU was originally confined to telephony at a fixed location for voice calls, fax calls and data calls (for narrowband Internet using dial-up). The first review of the scope took place in 2006. Two services, mobile telephony and broadband Internet were new candidates for addition to the US's scope. After consultation, reported in Communication on Report regarding the outcome of the Review of the Scope of Universal Service, neither mobile telephony or broadband Internet, was added for the following reasons:

- Mobile telephony passed the first requirement—ability to use a mobile phone is now seen as essential for social inclusion in Europe—however, normal commercial forces had led to widespread availability and use of mobile phones, so the balance of opinion was that there was no need for regulatory intervention to achieve universal mobile service;
- Broadband Internet, on the other hand, failed the first test—well under half of European households subscribe to broadband Internet and currently it isn't seen as essential for social inclusion. Therefore, the second test was not applied.

In 2008, broadband Internet is defined by the ITU and OECD as always on service with download speeds equal or faster than 256 Kbps. The Federal Communications Commission (FCC) of the United States defines broadband as 768 kbps or faster. Broadband speeds develop rapidly: in 2004 the average advertised broadband speeds were typically 2 Mbps in OECD countries, while this increased to almost 9 Mbps in 2007. However, the European Commission finds that actual download speeds are between 144 and 512 kbps in rural areas and 1 Mbps in urban areas in the years 2004 and 2005. Despite not including broadband into the scope of universal service, the EU is very active in promoting and expanding broadband take-up and in providing access to above minimum download speed broadband also in rural areas for quality of life, social inclusion and economic-strategic reasons. The European Commission believes all Europeans need broadband access [1]. Finland may be leading the way in Europe to including broadband internet access in the definition of "universal service". In October 2009, the Finnish Ministry of Transport and Communications issued a decree that amended the definition of "universal service" to include access to an Internet connection featuring a download rate of at least 1 Mbps. For developing countries, modified forms of this general test regarding which services to include into the UAS scope might be preferred. The main driver for UAS may be economic before social factors come to the fore, so policy makers in developing countries could ask the following questions:

- In light of economic, social, and technological developments, has the ability to use the service become essential for uniform countrywide economic development or social inclusion; and
- Are normal commercial forces unable to make the service available for all to use, within a timescale consistent with the contribution of the service that will meet the Millennium Development Goals?

If the answer to the first question is affirmative, then UAS goals should be set for the service. Social research can help clarify what has become a new social norm. This might be, for example, the greatest distance that it is reasonable for people to travel in order to use phones or the Internet. The Practice Note Finding out what the necessities of life are and how many people lack them shows one approach to social research used in the UK. If, in addition, the answer to the second question is affirmative, and normal commercial forces cannot guarantee that the goals are achieved soon enough, then regulatory intervention is needed. Later chapters of this module discuss effective forms of regulatory intervention.These test questions relate specifically to whether a service can be accessed by everyone. They refer to uniform countrywide economic development, not just to a country's general economic development. A service such as broadband Internet might be essential to the overall economic development of a developing country [2]. But while uniform countrywide economic development is desirable, it is rarely regarded as essential on the same time scale as the overall economic development of the country.

Practice Notes

- **Finding out what the necessities of life are and how many people lack them**
- **Finland defines "universal service" to include 1 Mbit internet connection**

Reference Documents

- **Communication from the commission to the council, the european parliament, the european economic and social**

committee and the committee of the regions.

- EU Universal Service Directive

4.1.1.5 TARGETING SPECIAL ASSISTANCE

Providing special assistance to specific groups that are considered to be in need of support, is typically related to universal service (US), not to universal access (UA). UA aims to make a service available and affordable in poorly served areas, and uses public, community or shared access. Often the rural and remote areas requiring assistance can be identified by examining wireline and wireless coverage. All subsidies for US should be focused. This view accords with both economic theory and common sense; subsidising a large population group will always subsidise some people who do not need help, and thereby reduce the amount that is available for people who do need help. However, focusing subsidies has costs as well as benefits, and it may be desirable to avoid formal eligibility tests that may effectively exclude many people that the subsidies are intended to help. Also, providing individual end-user subsidies comes with administrative costs. Subsidies focused on specific groups of people are intended to make a service accessible and affordable, particularly to citizens with low incomes. When focussing subsidies, policymakers and regulators need to ask the question, "Which group is likely to justify special assistance through subsidies?" The answer to this question is those who are in need, but what does this mean? In many countries, elderly people or those with disabilities are thought to justify special assistance. Other populations sometimes thought to justify special assistance include:

- Women, who, in some developing countries, often have lower incomes and social obstacles which exclude full use of communications;
- Ethnic communities who have traditionally suffered from discrimination or neglect. When these people live in poorly served areas, these areas may get extra priority for UA;
- Unemployed people, for whom Internet access can provide new skills, networking capabilities, or knowledge leading to employment;
- Young people, who usually have low or no income but who are often early adaptors of new technologies and can easily learn to make the most of them for the wider benefit of their families and eventually society; and
- War veterans or others felt to deserve recognition of national service. Veterans are often singled out in former Communist economies.

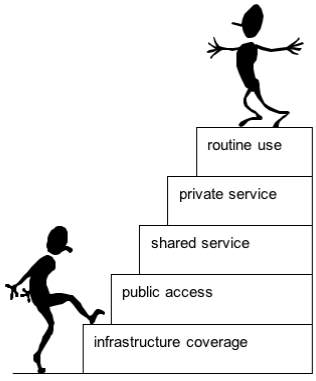
Each country must decide which, if any, groups justify assistance and for which services. Again, the decision needs to be guided by current service penetration, by financial resources necessary, and by financial sustainability. It is recommended that most countries should probably not provide assistance to particular people for a service until the service has achieved reasonable take-up (e.g., over 75 per cent) among the greater population.

Practice Notes

- Guidelines for universal access and universal service in Western Africa

4.1.1.6 USER COMMUNICATIONS CAPABILITIES

In addition to physical infrastructure, certain levels of types of service (e.g. public, shared or private) and user communications capabilities are required to progress ICT usage. In fact, as the figure below shows, there is a relation in terms of available access and service use.



◂ **Figure: Steps in developing communications capability**

Source: ITU-infoDev ICT Regulation Toolkit – UA Module

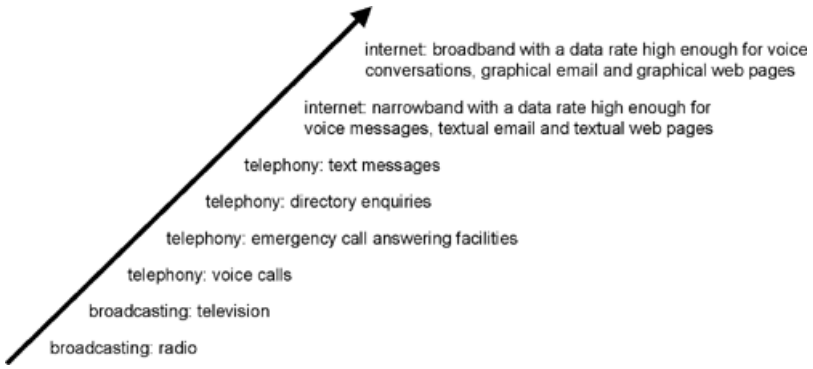
A routine user typically uses a service as a matter of course whenever it is valuable in daily life and not just in exceptional circumstances or emergencies. To become routine users, most people need the convenience of private service that will only be acquired if the service is accessible and affordable. The progression from infrastructure coverage to routine use is applicable to the Internet, as well as to telephony. However, there is an important difference between the telephony and Internet staircases—no special skill or education is needed to use phones, while using the Internet effectively needs certain levels of literacy and practice as well as other skills (e.g., use of software, knowledge of foreign language, etc.). Broadly speaking, most people need or want affordable telephone service, however, the same is not always true for the Internet. Even in developed countries, sizable proportions of the population do not want to use the Internet for a variety of reasons. The skills needed to use the Internet seem to come much more easily to younger people, and older people sometimes lack both interest and skills. However, more importantly, in developing countries, with lower educational levels and less relevant content, there are more barriers for people to use the Internet, even where it is accessible and affordable. Universal access (UA) programmes for the Internet are therefore often far behind those for telephony.Many countries do want goals for universal access and service (UAS) for both telephony and Internet (and even for broadband Internet), recognizing the potential of enhanced and ubiquitous ICT services for social and economic development. Tracking progress across all of these goals becomes increasingly complex. A possible new approach for tracking progress that focuses on people's capabilities to use the technologies, rather than on the underlying infrastructure, is described in the Practice Note *Communications capability profiles.*

Practice Notes

- **Communications capabilities profiles**

4.1.1.7 REGULATORY INTERVENTION FOR UNIVERSAL ACCESS AND SERVICE

Telecommunications markets are dynamic; new technologies are constantly emerging, and new services rapidly become popular and then indispensable. So, universal access and service (UAS) aspirations are likely to rise over time. This is illustrated in the figure below.



◂ Figure: Possible rising aspirations for ICTs

Source: ITU-infoDev ICT Regulation Toolkit – UAS Module

With liberalization and effective regulation, normal commercial forces are more likely to be capable of fulfilling some, if not all, of the new aspirations. So it is not obvious whether more or less regulatory intervention will be needed as aspirations rise.Universal Service Obligations (USOs) have been a form of regulatory intervention for achieving universal service (US). The future of USOs is a topic for debate among stakeholders in developed countries, as represented by the OECD and the EU [1]. Some believe that USOs will soon be both impracticable and unnecessary, while others see them as more important than ever in an era when universal broadband access could contribute significantly to mitigating climate change and its effects. The outcome of this debate will differ from country to country, depending on political factors as well as on the need for, and supply of, communications services.For developing countries, a parallel debate will take place, with an equally uncertain outcome. Industry stakeholders like the GSM Association (GSMA) argue forcefully for regulators to stand aside and allow the markets to stimulate and fulfil demand for new services. At the same time, ICTs are a vital tool for development in sectors such as health and education that are usually understood to be commercially unviable and that need central government support. This toolkit aims to help policymakers and regulators in developing countries make informed decisions about the scope of UAS and regulatory intervention in their own countries.

4.1.2 CURRENT STATUS OF UNIVERSAL ACCESS BY WORLD REGIONS

In **Section 1.1.1**, Universal access (UA) and universal service (US) were defined in terms of availability, accessibility and affordability. This section explores these concepts in more detail and with practical illustrations, while at the same time summarizes the status of UA or US by world regions. For most developing countries, the availability of telephony is understood primarily as mobile coverage. In almost every country of every region, mobile service has reached a greater

level of penetration and, in most developing countries and emerging markets, a greater level of population coverage than fixed networks.

Figures for this are discussed in **Section 1.2.1**.The accessibility and affordability of telephone service have been improved by innovations in the mobile industry, such as prepayment (which does not need a monthly subscription, a bank account and regular income) and low-denomination refill or scratch cards (which allow poorer people to buy smaller amounts of telephone service). Interestingly, none of these innovations has to do with the actual price of a mobile call, which is still more expensive than fixed services in most countries, but rather with the packaging of services. Various other ICT service providers follow this approach, e.g., by offering prepaid Internet access or fixed voice services.

Section 1.2.2 describes the ways in which mobile phones have become more affordable and accessible.However, affordability analyses show that even with cheap phones and very low entry-price tariffs, a significant portion of householders in rural areas may still need public access phones as they are too poor to pay for their own phone.

Section 1.2.3 outlines various forms of public access using mobile phones designed to meet this need.

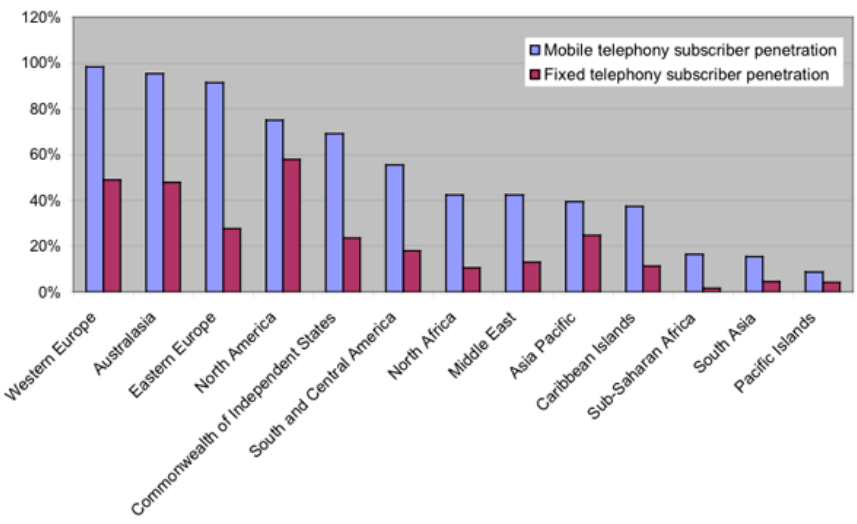
Section 1.2.4 provides figures on Internet subscriber and user penetration, Internet costs and broadband development. Internet use is much slower to develop than telephony use. It has higher barriers in regards to literacy in general and computer literacy in particular, cost of required terminal equipment (i.e., the personal computer) and useful content, support and maintenance. Universal Internet access therefore needs to overcome these barriers, besides ensuring the development of infrastructure (international and national backbone) and public access Internet centres, such as telecentres.

Section 1.2.5 outlines various forms of public access Internet centre.

Finally, **Section 1.2.6** provides a brief summary of broadcasting equipment penetration for comparison with the Internet.

4.1.2.1 AVAILABILITY OF TELEPHONE SERVICES

For most developing countries today, the availability of telephony is primarily through mobile coverage. Mobile service has reached a greater level of penetration than fixed networks in almost every country and region worldwide; in most developing countries and emerging markets, more of the population is covered by mobile than fixed networks. In 2002, mobile penetration overtook fixed penetration in the world as a whole. This phenomenal change is illustrated in the figure below, and must be recognized as an opportunity for the more rapid achievement of universal access and service (UAS) than was thought possible even a decade ago.



◂ Figure: Mobile and fixed telephony subscriber penetrations by region, 2006

Source: ITU World Telecommunication/ICT Indicators Database

The commercial development of mobile networks is doing much to provide a platform for UAS in the developing world. ITU reported that approximately 70 per cent of the world's population was covered by mobile wireless signals at the end of 2005 and over 82 per cent at the end of 2007 [1]. A study estimated that this number would reach at least 90 per cent by 2011. The 2006 study found that 38 European countries have achieved over 95 per cent population coverage and typically 90 per cent geographical coverage. Even the least developed world region, Africa, had at least ten countries with greater than 90 per cent population coverage, with a further eight countries having over 70 per cent population coverage. Africa's total population coverage was 60 per cent and its geographical coverage less than 30 per cent [2].While in 2006, 80 per cent of the world's population was covered by mobile wireless signals, less than 50 per cent were subscribers. Though the

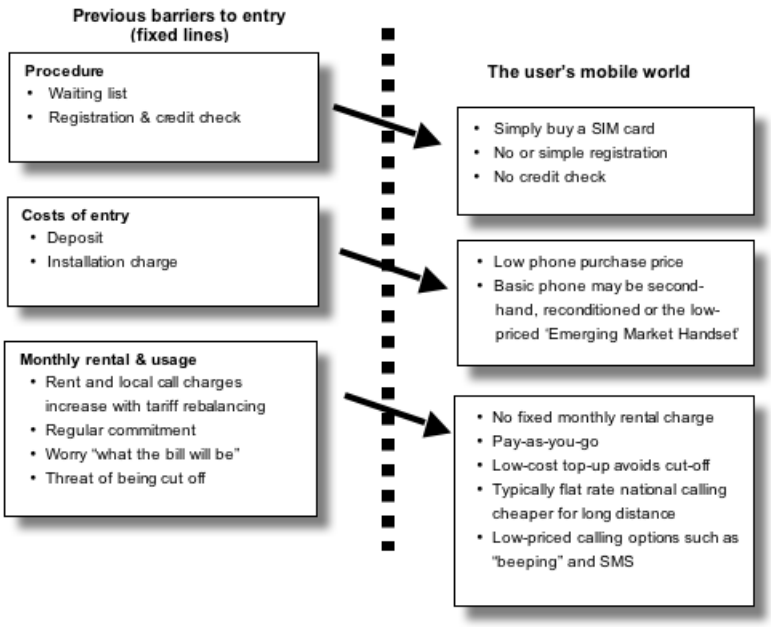
coverage might show the availability of the service, it does not show the accessibility and affordability, which are looked at in **Section 1.2.2**.

4.1.2.2 ACCESSIBILITY AND AFFORDABILITY OF TELEPHONE SERVICES

Service take-up by low-income users depends on the removal of both price and non-price barriers.

Removing non-price barriers

Mobile services have become popular in developing countries primarily because barriers to service-take up have been removed and new service features making the service more accessible have been introduced. Features that make mobile service more attractive to individuals wanting private service are shown in the figure below.



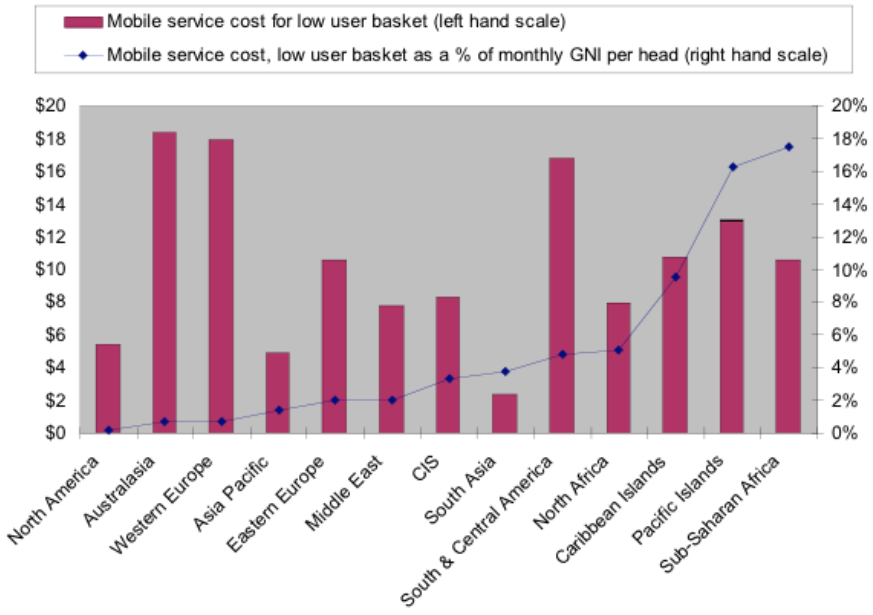
◂ Figure: The use of mobile phones to remove barriers to private service

Source: Universal Access: How Mobile can bring communications to all (GSMA, 2006).

All of these features are available in most developing countries. Interestingly, some wireline operators and ISPs have copied a number of these features successfully. Fixed network operators may offer prepaid accounts, and ISPs offer prepaid scratch cards. Also, technological developments and market forces have brought significant price reductions to phone service. With all of these trends, the barriers impeding private service for low-income people within mobile coverage are being significantly reduced.

Removing price barriers and increasing penetration

The cost of private telephone service and routine use may still be too high for a considerable number of people in developing countries. The following figure shows the monthly cost of mobile phone usage on a regional average basis, using the first OECD low user basket measure that includes 25 90-second mobile calls, and 30 text messages per month. This illustrates that people in sub-Saharan Africa would need to spend 17 per cent of the Gross National Income (GNI) per head to be considered low level users in the context of developed countries. However, this is based on a low-usage basket oriented to the norms of low-usage in the developed world. The figure below demonstrates that in several regions, expenditure on mobile telephony costs would be about four per cent of GNI per head, whereas in most developed countries, the equivalent level of usage would cost less than one per cent of GNI per head. It is important to note that personal income is usually less than the GNI, which includes various corporate money flows.



◂ **Figure: Mobile telephony costs by region, 2006**

Source: ITU World Telecommunication/ICT Indicators Database

Operators and policy makers recognize the social, economic and commercial value of private ownership and improved market penetration, even in low-income countries and at very low levels of usage (well below the OECD expectation for low usage). Operators recognize that if they offer very low entry-price tariff schemes that enable low-income users to become subscribers and stay connected, the users will potentially receive more calls than they originate; this factor contributes significantly to increased commercial viability. Thus, the majority of operators in developing countries offer low-priced access tariff schemes which allow subscribers to stay connected even if the subscribers make only a few outgoing calls. Research into the minimum amount a subscriber has to spend on usage to be prevented from being disconnected by the operator due to inactivity for 61 operators, almost half of which were from developing countries, revealed that the minimum required usage was less than USD 2 per month, and in most of the developing country cases, the amount was even below this [1]. Although these tariffs could result in some users spending an average of only 17 per cent of the surveyed operators' Average Revenue Per User (ARPU), the operators are prepared to allow users to remain as subscribers at these levels. In many cases, these subscribers are receiving calls from friends and relatives that far exceed the expenditures they make directly.The trends are for these lowest available entry-level prices, pertaining to network access alone, to become even lower, and for users to be able to replenish their prepaid accounts with very small denomination refills. This obviously increases the potential that low-income people may become and remain subscribers. An analysis of household incomes in developing countries and observed demand, indicates that once service becomes available geographically and is offered on least entry-price terms, the majority of users can afford the monthly costs of staying connected and will make a minimal number of calls. The level of affordability may extend beyond 90 per cent of households even in low-income countries, though for various reasons the actual penetrations still remain below this figure [2]. With strong encouragement from service providers, equipment vendors have been developing low-cost mobile phones. In 2007, 2G phones were available for as little as 30 USD, and 3G phones were available for 130 USD. The 30 USD price for an individual mobile phone is still too much for at least 1 billion people, so some mobile phones are now being designed for sharing. See also **Section 8.4.1**.

4.1.2.3 PUBLIC ACCESS TO TELEPHONE SERVICES

Network operators can tolerate low Average Revenue Per User (ARPUs) from some users however affordability analyses show that even with cheap phones and very low entry-price tariffs, a significant portion of households in rural areas may still need public access phones [1]. These services may be formalized public phones or informal shared access and street-side or village reseller businesses. The reasons why people need public access phones include the following:

- The cost of phones or entry-price private access tariffs may still be too high for some individuals or households;
- A number of users who are physically or intellectually challenged, pre-literate, or otherwise impaired, may need a human intermediary to assist them with accessing the service;
- Some people prefer to use private phones mainly for incoming calls and to make outgoing calls at public telephones because some volume-discounted tariff schemes allow public access providers to offer calls at a lower per-minute price than private users have to pay; and
- Emergencies may occur when a private phone is not available.

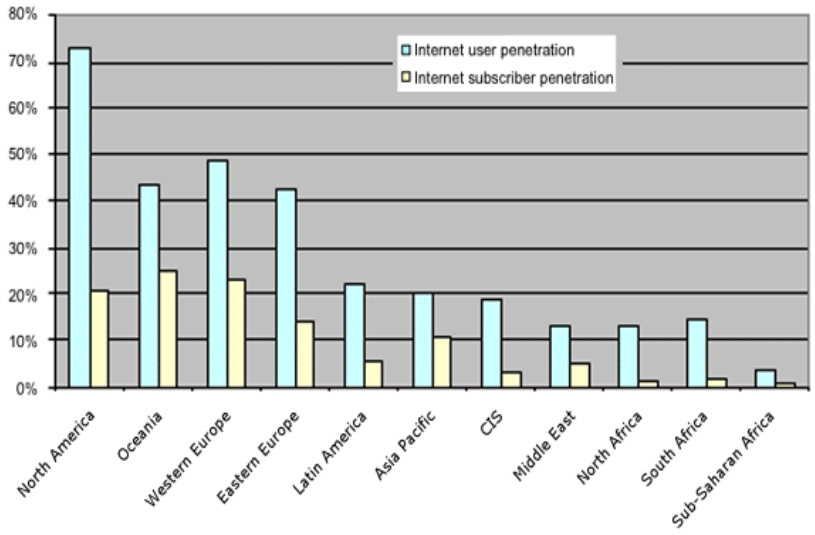
Public phones or shared access phones, managed by individual service providers or resellers, will continue to remain important for those without private service, or with challenges, for some time to come. Formal and informal shared usage and airtime resale businesses emerge virtually everywhere mobile networks exist. These may be phone kiosks, simple public phones offered on the street, often with only a small chair, an umbrella for weather protection, and operated by individuals, often women (phone ladies or umbrella people), and operator branded outlets. Informal resellers have led the way, or at least moved in parallel with more formal institutional phone reselling establishments, to provide public access in both urban and rural areas. In all world regions, there are many variations of and approaches to public access with new ones emerging constantly. A sample of some of the public telephony models that currently exist appears in the table below.

Source: Adapted from *Universal Access: How Mobile can bring communications to all* (GSMA, 2006).

Types of Mobile Public Access		
Type	Description	Example
Unmanned coin- or card-operated public phone box or cabin	Often managed by the main fixed-line incumbent operator	Telus Canada, Deutsche Telekom, British Telecom, etc.
Micro-credit led community phones	Micro-Finance Institutions members assume loan in exchange for mobile phone kit	Grameen Village Phone (VP), MTN Uganda VP, Rwanda VP
Mobile Payphones	Payphone deployment to further universal access objectives and obligations	Vodacom and MTN South Africa, MTN Uganda
Entrepreneurial locally-owned and operated Public Call Offices (PCO)	Micro-entrepreneur provides public access to existing networks	Celtel Burkina Faso, MTN Nigeria, MTN Nigeria umbrella ladies
Independent companies	Private company provides public access to existing networks	OnePhone Mozambique, Fones4U Botswana, Smile Communications South Africa
Company initiated public phones	Mobile operator offers direct phone reseller opportunities to local people	Spice Telecom, India
The GSMA shared phone and shared-phone software initiative	Using various terminal types, including low-cost phones, the GSMA is linking up with a number of operators to help streamline the model, lower costs and broaden the deployment of public access	Shared access pilots are taking place in South Africa, Nigeria, Kenya, India and Albania
VoIP telecentre services	Generally co-located with cybercafés	

4.1.2.4 INTERNET USAGE

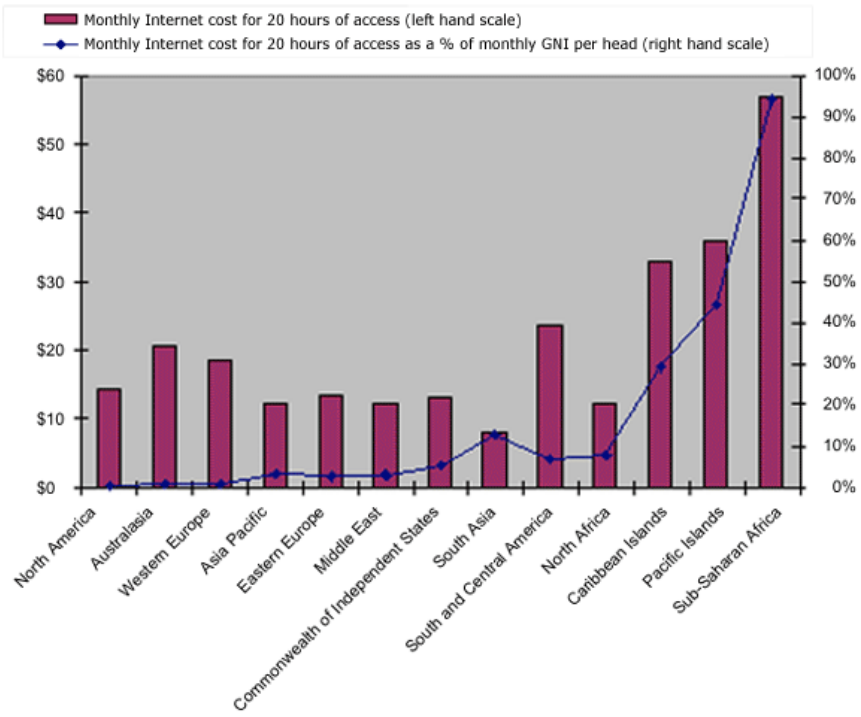
As described in **Section 1.1.6**, Internet penetration is significantly slower to develop than telephony. Internet take-up is constrained by developments such as the availability of low-cost personal computers or similar user terminals, wide-spread electrical power to run computers, public education aimed at improving Internet literacy and relevant Internet content, applications and services such as those provided by e-government initiatives (see **Section 1.6.2**.), as well as others. The figure below summarizes Internet subscriber and user penetration in 2006.



◂ Figure: Internet subscriber and Internet user penetrations by region, 2006

Source: ITU World Telecommunication/ICT Indicators Database

Data of the number of Internet users is not readily available in many countries. The most reliable source of information on this indicator is surveys, and in Europe and East Asia they provide solid evidence of the state of Internet penetration. However, the data is not obtained in consistent ways in different countries, and is often estimated based on the number of Internet Service Providers (ISPs) and the number of users per subscriber. Even allowing for this, the ratio of user penetration to subscriber penetration varies a great deal regionally. In developed countries, where the cost of Internet access is relatively low, the ratio is typically around 2:1 and in countries with low incomes or higher prices, the ratio is considerably higher (between 3:1 and 10:1, for example) as many more users share single subscriptions. The figure below summarizes costs to users of a total of 20 hours of household Internet access using the cheapest available method (narrowband or broadband). There is generally an inverse relationship between penetration and cost. Sub-Saharan Africa, for example, has very high costs and very low penetrations.

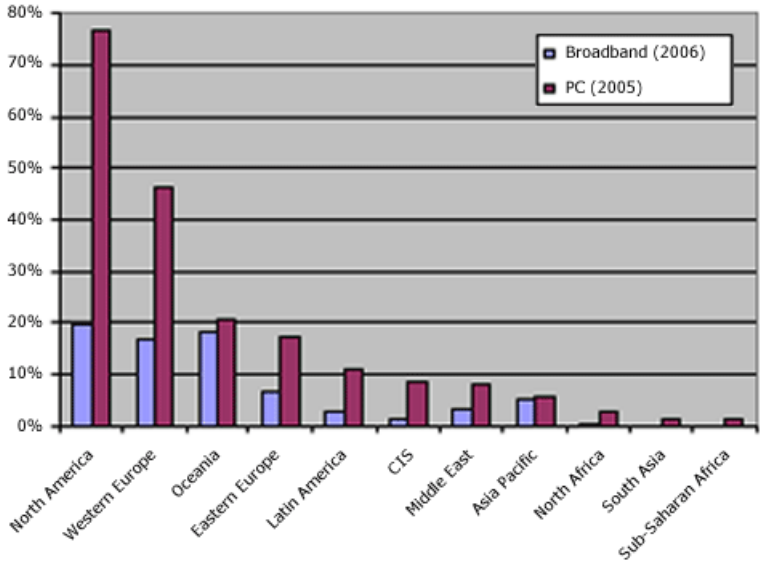


◂ Figure: Monthly Internet costs by region, 2006

Figure: PC and broadband penetration

Source: ITU World Telecommunication/ICT Indicators Database

Source: ITU World Telecommunication/ICT Indicators Database



In 2006, broadband penetration reached approximately 20 per cent in North America. Western Europe had above 15% per cent penetration, as has Oceania. In all other regions broadband penetration average was still below 10 per cent, as shown in the figure below.

4.1.2.5 PUBLIC ACCESS TO INTERNET SERVICES

As in the case of telephony, forms of public Internet access are essential at the community level for social and economic development. All continents have multiple public points of Internet access, which have been developed through policy, private entrepreneurship and other public initiatives designed to overcome the barriers for Internet access. These access points range from purely commercial cyber-cafés, to non-profit or publicly funded telecentres and may consist of small public Internet access points with one to four computers (many hundreds of these access points have been established through universal access and service funds [UASFs] on semi-commercial or non-profit bases) to large multi-purpose community telecentres, most of which have been financed separately through aid agency activities and agreements.The table below summarizes a survey of such models in Latin America. While there is a lot of information on classifications of telecentres, case studies and best practice, there is little comprehensive data that give an overview of the numbers of public access Internet centres by world region.

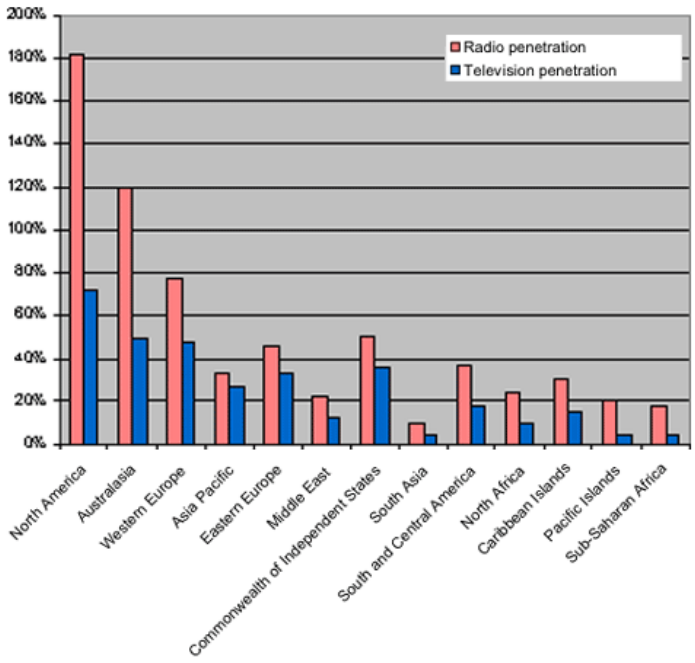
◂ **Table: Classification of telecentres**

Source: *Adapted from Telecentres for Socioeconomic and Rural Development in Latin America and the Caribbean* (Francisco Proenza and others, IADB, May 2001).

Type	Services	Management-Administration	Examples
Commercial	The basic service is computer plus Internet connection. Called a cybercafé when a cafeteria or bar is present, but these other services generate only a small part of the income (<20%).	Private business	Cabinas Publicas in Peru, cybercafés in Bolivia, Argentina and elsewhere; E-Choupal in India.
Franchise	Seeks to stand out by improved quality, faster connection, more and better services, atmosphere and comfort.	Private business	There were examples in Latin America and Africa, however, they have ceased to exist, as the low margins of Internet cafes make a franchise model challenging. In India, Akshaya uses a public-private partnership, franchise model.
NGO	Wide diversity of services, orientation, and target group, depending on location and orientation of promoting institution. Services include Internet combined with training and development activities. Hours of Internet may be subordinated to use of machines for other uses by NGO staff.	NGO or development project (dependent on grants from private businesses for initial computers and software)	CDI (Brazil), El Encuentro (Chile), LINCOS (Costa Rica), AEDES (Cotahuasi, Perú), Gemas da Terra Rural telecentres (Brazil), Infoplazas (Panama),, MS Swaminathan Research Foundation Village Knowledge Centres (India).
University	Many terminals (30 to 100) mainly for students but also available to general public. Specialized technical support available. Academic courses in computers and preparation of contents easy to organize.	University	Universidad Nacional San Agustín (UNSA), Universidad San Antonio Abad del Cusco (UNSAAC)
School	The school opens its doors to the community after class hours. Services tend to be many and varied (Internet, e-mail, content preparation). Most suited are e-literacy programmes and continuing education.	School	Leo Ussak (Canadian Arctic), Casi (Uruguay), Fundacion Omar Dengo (Costa Rica)
Municipal/State	In principle, can include a wide range of services (public and private).	Municipal government directly, in partnership with other entities, or entrusted to private enterprise	Infoplazas in Pedací and Penonomé (Panamá), Amic@s (Paraguay), Sao Paulo Acessa (Brazil), Pirai Digital Project (Brazil), IT clubs (Egypt), Gyandoot (India), e-Sri Lanka
Multipurpose	Rural: Access to Internet, e-mail and related services. Commercial web hosting to community, telephone booths, sales of working materials and stationery, Internet café, training courses.	Administrative board representing donors, service suppliers and community members	LINCOS (Costa Rica), Joven Club de Computacion (Cuba), Puntos de Acceso (Venezuela), GESAC (Brazil), Compartel (Colombia), UNESCO Community Multimedia Centres (Mali, Uruguay and elsewhere).

4.1.2.6 BROADCASTING USAGE

Traditionally, broadcasting has not been a part of universal access and service (UAS), but is now regarded as part of ICTs, in particular as the underlying technologies and delivery mechanism between telecommunications and broadcasting are converging. First models of how to include broadcasting in UAS policies are explored.Interestingly, there are fewer radio and television than telephony subscriptions in many regions of the world. In some cases this is due to the fact that free-to-air radio and TV does not require subscriptions, and the number of actual radio and TV users is much higher than subscription numbers imply. These numbers might increase as people take up phones that also support mobile radio or television services. The number of radios is higher than the number of televisions by a factor of two in many regions of the world, and the number of televisions is much higher than the number of personal computers in regions made up of developing countries. The figure below summarizes the numbers of radios, televisions and personal computers by region.



◂ Figure: radio, television and personal computer penetration by region, 2003

Source: CIA Fact Book

While broadcasting has been available for much longer than the Internet, figures for usage of broadcasting are not always comparable between countries because in many countries the numbers of radios relate only to stand-alone radios (not to radios incorporated in other equipment such as cars) and the numbers of subscribers may not account fully for free-to-air users.

4.1.3 RATIONALE FOR A UNIVERSAL ACCESS POLICY

Section 1.2 illustrates that although great strides have been made in universal access and service (UAS), the objectives of access and service for both telephony and the Internet have not yet been achieved. In that context, this section examines why there is a need for UAS policy.The main arguments for a UAS policy are the following:

- **ICTs are social and economic enablers.** ICTs are increasingly used in all sectors of economies. In many regions, economic activity is shifting away from agriculture and industry to services sectors, and towards the new information economy and society. The ICT sector is considered to be a significant engine of growth for economies. This is elaborated in Section 1.3.1.
- **Supply and demand increases the importance of UAS policy.** Interestingly, the increased supply of ICTs through rapid technological developments and base of pyramid marketing, actually fuels the requirement for UA. Mobile phones, not too long ago considered luxury items and out of reach for most, are now providing the main access to voice service for the majority of people in many countries, making it more urgent that the population without access be provided with access to phone service. Similarly, for large parts of populations work and life without the Internet is unthinkable, and ever more megabyte-rich applications require increased broadband development. The more ICTs are used, the more there is a dependence upon them, which in turn makes it more essential that all citizens have access to ICTs. This is explained in Section 1.3.2.
- **Market gaps can remain in place.** While it has been demonstrated that market forces, after liberalization and sector reform, have had the greatest impact on improvement of UAS in many developing countries, for various reasons market gaps can remain in place. Some countries, for example, have exceptionally challenging geographic characteristics combined with extremely low population densities (e.g., Mongolia and Botswana) or isolation (e.g., many islands in the Pacific region) or extreme poverty, which make UAS tremendously challenging. In other

countries, the market might be able to achieve UAS, but the timeframe in which this could be obtained, might be considered too long.

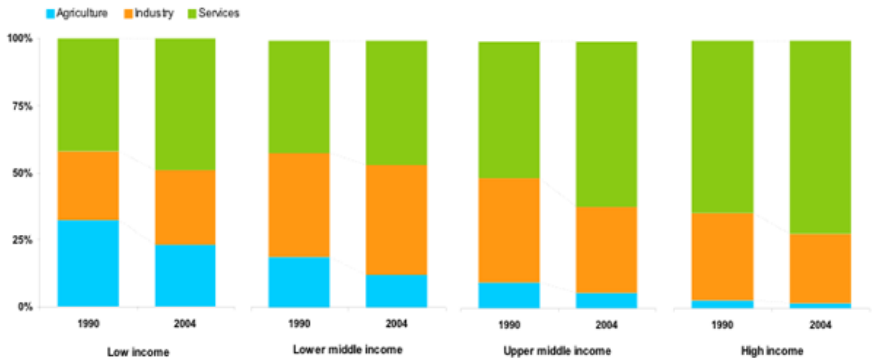
- **Monitoring UAS and updating it.** Constant change in technology, services, and pervasiveness of various ICT services makes it necessary that the status of UAS should be monitored and policies continue to be updated and developed. Also, there are countries where the market can achieve UAS, but there is a need for public oversight to confirm that it has been achieved, to improve regulation, and to continually review the concept of what is considered UAS.

Market gaps and the need to monitor UAS are presented in **Section 1.3.3**.

4.1.3.1 ICTS AS SOCIAL AND ECONOMIC ENABLERS

Over the past decade the role of ICTs in all economies has become critical. The move towards an Information Society is distinguished by the following characteristics:

- **Growing dependence on ICTs.** As ICTs become more pervasive in business and personal contexts, people become more dependent on them for their livelihoods and for fulfilling their social and recreational needs. Being unable to access or use ICTs can become a serious deprivation;
- **Growing ICT sectors.** The provision of ICTs and related services forms a sizeable sector of many economies. Increasingly, developing countries are introducing high-level ICT strategies that aim to develop this sector of their own economies as well as using ICT as a tool in other sectors. One study for a mobile network operator has suggested that a 10 per cent increase in mobile penetration in a country can grow the gross domestic product by 0.6 per cent [1]; and
- **More use of ICTs.** Economic development and growth entail a shift in the proportions of national output, away from the primary sector of agriculture, through the secondary and tertiary sectors of industry and services, towards the new information economy. The services sector has become increasingly ICT-intensive, and the knowledge sector is largely dependent on ICTs. ICTs enhance productivity across all sectors, including government. The figure below illustrates the shift for the three traditional main output sectors—agriculture, industry and service sectors—for countries at different income levels.



◂ Figure: Percentage of total output by main economic sectors for countries at different income levels, 1990 and 2004

Source: World Bank Development Indicators 2006

Reference Documents

- **Nigeria: The Impact of Mobile Services in Nigeria: How Mobile Technologies Are Transforming Economic and Social Activities**

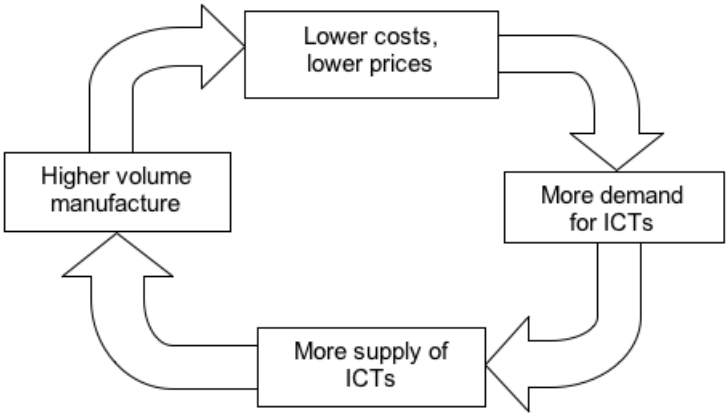
4.1.3.2 DRIVERS FOR UNIVERSAL ACCESS AND SERVICE POLICY

Several inter-related factors are now converging to increase the importance of universal access and service (UAS) policies for ICTs, in every country. There is high growth on both the supply and the demand sides of the sector, largely but not completely balanced through the market.

In particular, on the supply side:

- Rapid technology innovation and development has provided multiple options for communications, which are especially promising for Internet and broadband (especially wireless). **Chapter 8** explores what the implications are for UAS. These technological developments vary widely in maturity, capability, complexity, cost and economic scale for deployment. The suppliers of many of these technologies are vying for opportunities to sell into emerging

markets, creating a potential for a virtuous spiral of high volume manufacturing with corresponding cost savings, lower prices and further market expansion;



◂ **Figure: A virtuous spiral towards ICT growth**

Source: ITU-infoDev ICT Regulation Toolkit – UA Module

- Base of pyramid marketing (selling low-cost goods and services to mass markets of low-income groups) is widely recognized for its significant commercial potential across many sectors as well as social impact, including communications. Many approaches and techniques are copied from one sector to another, e.g., the concept of single-use packages of a tangible item such as shampoo or sauce, has been copied by providers who will offer very small pre-paid phone top-up cards, costing USD 0.50 or less, and in some cases even a single phone call or a few text messages. This is also increasingly used in the context of Internet services, where one can purchase scratch cards which give passwords to enable Internet use in units of 10 minutes, 30 minutes, 1 hour etc.; and
- Liberalized telecommunications markets are becoming the norm in more countries; in markets where there are no barriers to the entry of providers, the boundaries of telecommunications and broadband coverage and the number of people served, are expanding further and faster than previously imagined possible.

On the demand side:

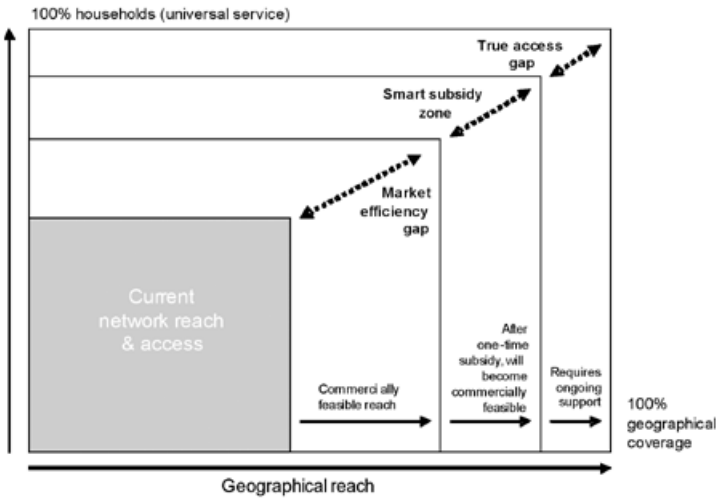
- Many people, who once would not have dreamed of using, let alone possessing telephones, can do so because phones have become both more available and more affordable. Citizens derive various personal and economic benefits from phone use, including being able to keep in touch with family (who are now often absent for work) and friends, and are especially useful in emergencies. The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction presents evidence of this;
- For many more people, however, telephones remain out of reach (physically, financially or both), although they would get similar benefits if they could—this has significant implications for UAS and represents vast untapped potential; and
- Public benefits for the society and the economy from wider telecommunications access are greater than, if not equal to, the personal benefits that citizens gain with access. E-government, agriculture and rural livelihoods, health, education and financial services can all promote economic and social development. Some of these benefits are discussed in **Section 1.6**. A lesser-known example of how the public benefits from wider phone access is the spread of social support helplines. These provide support for callers, often abused children or adults seeking information or assistance.

Reference Documents

- **The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: A study of rural communities in India (Gujarat), Mozambique and Tanzania**

4.1.3.3 MARKET GAPS AND UNIVERSAL ACCESS POLICY

Three separate zones exist within the so-called access gap, namely the market efficiency gap, the smart subsidy zone and the true access gap, as illustrated in the figure below. Each zone requires a distinctive set of policies and strategies which together yield an integrated universal access and service (UAS) programme. There are also two dimensions to the challenge of achieving UAS: these are poverty and high-cost areas. Poverty, of course, exists in both urban and rural areas, however the cost of addressing both poverty and high-cost areas together, as exists in many rural settings, is much higher. Providing access to the urban poor is well within the reach of the market.



◂ Figure: Distinctions within the access gap

Source: Initial concept in "Telecommunications & Information services for the Poor. Towards a Strategy for Universal Access", by J. Navas-Sabater, A. Dymond, N. Juntunen, 2002. Modified by Intelecon.

The market efficiency gap is the gap between the service reach which can be achieved in a fully liberalized and efficient market and what is actually achieved by markets under existing conditions. This gap can be bridged through private service provision so long as the regulator and policymakers remove non-economic barriers, create enabling regulation, ensure a level playing field among all market participants and the create a positive fiscal, business and investment climate. This allows operators and service providers to be able to serve a much broader area and its inhabitants and thus close the market efficiency gap. This frontier can be reached within the context of telecommunications sector reform and does not require subsidies. Many countries are now doing very well in bridging this gap through effective competitive service provision. The only questions relate to how far the market can actually reach commercially, and how best to implement and sequence more pro-market conditions to reach the limits of the market. The theme of an effective liberalized market, together with the regulations needed to implement it, is discussed in detail in **Chapter 2**.

The smart subsidy zone refers to rural or high cost areas, and low-income population groups that will not be reached by the market alone, even if it is an efficient market, or at least not for a long time to come. Targeted financial intervention beyond normal regulatory measures and incentives is required to provide services to these population groups and areas. A smart subsidy is the term used to describe an initial subsidy (usually given on a once-only basis) that is designed to be results-oriented, does not distort the market, and encourages cost minimization and growth of the market. It helps to kick start a project or service, with the ultimate objective of the programme becoming commercially viable, whereas without the subsidy investors might otherwise have been reluctant to invest. Investors' reluctance could be due to perceived risk or general lack of capital for the kind of service opportunities that are considered by government to be essential for socio-economic development. The important element of the smart subsidy zone is that an initial subsidy to private sector providers will make the project commercially viable on an ongoing basis by filling the financial gap with a one-time subsidy, which increases the operator's rate of return and reduces his risk. No further subsidies are needed if the service targets are set realistically, with medium term commercial viability in view. Targeted interventions are usually implemented using a Universal Access and Service Fund (UASF). **Section 5.3.8** recognizes that the extent of the smart subsidy zone is sometimes hard to predict and can be a moving target, as it is not uncommon that operators exceed expectations and close this gap.

The true access gap comprises areas or communications targets that are beyond commercial viability, even in instances where initial smart subsidies are given. Commercial sector operators or service providers serving these areas or population groups would need ongoing financial support, possibly in the form of operating subsidies (or end-user subsidies in the case of universal service [US]). It is a political decision if and to what extent to subsidize ongoing service provision to areas and population groups that are beyond the limits of the smart subsidy zone and whether or not to use UASFs to finance such operations. However, even the true access gap can sometimes be bridged with innovative commercially-related approaches. In some cases, true access gap areas can be combined with more profitable areas, without need for ongoing subsidy. Also, in most countries, the true access gap may, in fact, apply only to a small percentage of the total population. In cases where the market is in fact achieving most UAS objectives, a degree of public oversight remains reassuring. It can make progress more visible, highlight any deficiencies and provide a safety net for unfortunate people or places not otherwise served. Constant change in technology, services, and pervasiveness of various ICT services makes it necessary that the status of UAS should be monitored and policies continue to be updated and developed. In all cases, it is important to work with the market as it develops. This involves, for example:

- Consulting industry and the wider public on the details of UAS policy and its implementation, and taking views expressed into account, especially those that rest on practical experience;

- Ensuring that all market participants have the opportunity to contribute to UAS goals, and receive appropriate recognition when they do so;
- Reviewing policies and practices regularly to keep pace with market and technological developments; and
- Wherever practicable, incorporating competitive mechanisms into the distribution of subsidies for UAS projects.

4.1.4 CHANGING CONTEXTS AND TRENDS FOR UNIVERSAL ACCESS POLICY

Universal access and service (UAS) policies must fit contexts that have changed significantly over the past decade. In developing countries, these policies now have:

- **Much more ambitious goals.** Technology change and market growth have lowered costs to the level where near-universal access to telecommunications is an achievable goal for many countries, and a degree of use can be affordable for almost all citizens. Many countries have now set their sights on universal access (UA) for Internet and broadband services, as well as universal service (US) goals for telephony. **Chapter 8** discusses the implications of new technologies for UAS. ICT spending is now entering the budgets of base of the pyramid consumers [**1**]. Gapminder provides several interesting ways of visualising some of the tremendous changes, country by country, which have been taking place in technological usage [**2**].
- **More complex interactions with other policies.** ICTs are often interdependent and support many applications and services; these increasingly close relationships are often called convergence. UAS policies should ideally be designed in co-ordination with, or at least with consideration of, other government policies, including those for computer applications, health, education, government, and rural livelihoods (including electricity, infrastructure, etc.). Countries require overarching national ICT policies that address the sectors impacted by ICT. UAS policies are typically a sub-policy to the national ICT policy, which is outlining ICT development in all sectors of the economy and society. However, UAS policies aimed at increasing telecommunications infrastructure and access need not be held up if other sectors are slower; and
- **More experience and best practices to build on.** Over the past decade, many developing countries have introduced UAS policies. This toolkit aims to bring together the most important lessons from this experience.

These changed contexts are reflected in the observed and possible future trends in UAS policies described in **Sections 1.4.1** and **1.4.2**.

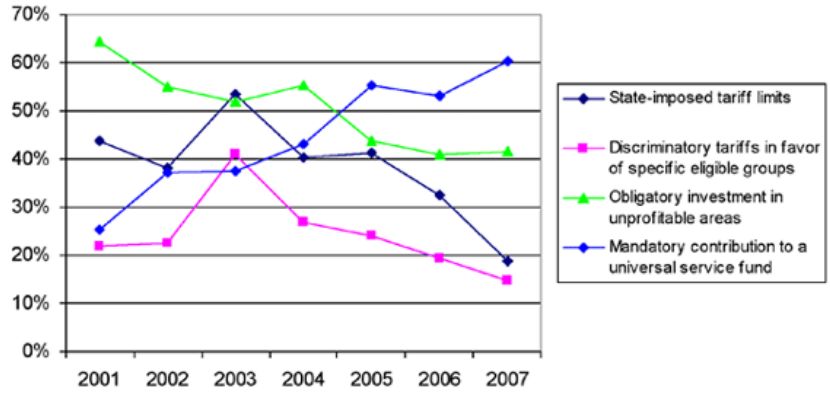
Reference Documents

- **ITU Global Symposium for Regulators (GSR) Best Practice Guidelines**

4.1.4.1 TRENDS IN UNIVERSAL ACCESS POLICY

The ITU World Regulatory Database (www.itu.int/ICTeye) helps in detecting trends in regulatory practice. The chart below summarizes data supplied on universal service (US) policies over the years 2001-2006. There are random fluctuations from year to year because of changes in the number and composition of survey respondents. Also, though the database refers to universal service, many of the policies relate to universal access, not to universal service. Still, the data support the following views:

- Universal Access and Service Funds (UASFs) are rising in popularity, and in 2007 are used in 60 per cent of countries that responded to the ITU survey;
- Obligatory investment in unprofitable areas has correspondingly been declining in popularity; and
- The use of state-imposed tariff controls, to benefit all customers or just to benefit specific eligible groups, declines steadily since 2003 and dipped below 20 per cent of respondent countries in 2007.



◂ **Figure: Responses to questions on universal service policy, 2001-2007**

Source: ITU World Regulatory Database

Fuller analysis of the responses shows that USAFs have been established across countries of all income levels. Although many countries have established a fund, the number of entities that are already operational is smaller. Other trends that can be observed are [1]:

- Using competitive processes when awarding UASF. Competition increasingly determines the company that receives funding, and also the amount of funding to be awarded, however, sometimes the amount of funding is decided in advance and the company chosen on the merits of its proposed activities (e.g., the amount of coverage that it offers);
- Greater diversity in the type and size of project that may receive UASF. Though new network infrastructure (both passive and active) is still the biggest charge on the funds, other costs such as telecentres, training and content may also be funded;
- Opening competition for funds to a wider range of entities. Large infrastructure projects require large companies with financial and technical muscle, but smaller projects may be suitable for smaller companies and greenfield operators and for more local participation;
- Specifying minimum requirements rather than specifying the technology, so as to gain the advantages of the latest technical advances (technology-neutrality);
- Greater awareness of the equal rights of people with disabilities and other disadvantaged groups, and the benefits of design for all to make ICTs accessible for everyone at little extra cost; and
- Using simplified methods of cost estimation when not using competitive processes. Estimation is based on trends or negotiation instead of complex cost modelling.

4.1.4.2 THE FUTURE EVOLUTION OF UNIVERSAL ACCESS: E-INCLUSION

The notion of universal access (UA) to telephony has extended in two directions: towards UA to ICTs (and particularly to the Internet, with broadband Internet access becoming the new norm), and towards universal service (US), in which access is convenient and affordable, so that use becomes routine. The future of universal access and service (UAS) will probably consist of "e-inclusion", which is the goal of the European Union (EU) in *EU Ministerial Declaration on e-inclusion, Riga*. The Riga declaration recognizes the social consequences of lacking access to ICTs when ICTs have become engrained in all parts of the economy, public and personal life. It stresses actions in the following areas:

- Using ICT to address the needs of older workers and elderly people;
- Reducing geographical digital divides;
- Enhancing e-accessibility and ICT usability for people of all abilities;
- Improving digital literacy and competences;
- Using ICT to promote cultural diversity; and
- Promoting inclusive e-government.

Aspirations have become much broader and include large elements of human social development and constructive applications, as well as the spread of technology and infrastructure. Developing countries have not yet reached the levels of dependence on ICTs that are current in the EU, but the following sentiments voiced in the Riga Declaration hold a broader relevance and illustrate the direction of change to be expected over the next decade:

- ICT contributes to improving the quality of everyday life and social participation of Europeans, facilitating access to

information, media, content and services, to enhanced and more flexible job opportunities, and to fight against discrimination. Improving ICT access for people with disabilities and elderly is particularly important.

- E-inclusion means both inclusive ICT and the use of ICT to achieve wider inclusion objectives. It focuses on participation of all individuals and communities in all aspects of the information society. E-inclusion policy, therefore, aims at reducing gaps in ICT usage and promoting the use of ICT to overcome exclusion, and improve economic performance, employment opportunities, quality of life, social participation and cohesion.
- To convincingly address e-inclusion, the differences in Internet usage between current average use by the EU population and use by older people, people with disabilities, women, lower education groups, unemployed and less-developed regions should be reduced to a half, from 2005 to 2010.

Reference Documents

- **EU Ministerial Declaration on e-inclusion**

4.1.5 INTERNATIONAL DEVELOPMENTS

The main international initiatives related to universal access and service (UAS) are the World Summit on the Information Society (WSIS) objectives, and the Millennium Development Goals (MDG).The WSIS objectives (reviewed in **Section 1.5.1**) raised the political profile of ICT development and recognized that access to communications is necessary to achieve basic human rights. The WSIS objectives also recognize the need for special action (i.e., a UA policy and its implementation) to provide such access to all, especially disadvantaged groups. They also prompted commitments to provide a large amount of funding for connecting communities globally by 2015. The Millennium Development Goals (MDGs), discussed in **Section 1.5.2**, include a global partnership for development whose target is to provide citizens with all the benefits of new technologies, especially information and communications, in cooperation with the private sector. There is some debate around whether and how ICT deployment assists in reaching the MDGs, but the following points seem clear:

- ICTs can help in implementing many initiatives that contribute directly to reaching development goals even when they do not necessarily contribute directly themselves;
- ICTs have impacts that depend on the technical, economic, administrative and social environment, so general assessments of their contributions without considering the local context are difficult; and
- ICTs are increasingly understood to be complementary to other development imperatives and not to be traded off against them.

4.1.5.1 THE WORLD SUMMIT ON THE INFORMATION SOCIETY OBJECTIVES

The World Summit on the Information Society (WSIS, Geneva 2003 – Tunis 2005) brought together world leaders to address themes related to the information society, ICT development and the digital divide. The summit and its follow-up process have been the focus of many activities that are relevant to universal access and service (UAS), including the following:

- **Declarations of widespread support.**
  These declarations cover:
  - Recognition of access to communications as necessary to achieve basic human rights; and
  - The need for special action to help provide such access to many disadvantaged groups, including least developed countries, inhabitants of remote rural areas, and people with disabilities. The Practice Note *The WSIS principles and commitments, 2003 and 2005* reproduces some particularly relevant passages.
- **Funded projects.**
  The ITU "Connect the World" initiative, which aims for global connectivity for every community by 2015, lists 70 multi-stakeholder projects, each related to one or more of three building blocks of UAS – enabling environment, infrastructure and readiness, and ICT services and applications [1]. Taken together, these projects reach practically every country in the world. They build on the 375 "Golden Book" commitments made by all types of stakeholders immediately after the Summit [2]. These commitments, represented new funding, amounted to nearly USD 4 billion. The stocktaking database currently lists more than 3000 projects, over 1000 of which relate to ICT infrastructure building. Also, the World Bank is actively funding major connectivity initiatives, especially in Africa, notably the Eastern Africa Submarine Cable System (EASSy) and Africa Regional Communications Infrastructure Program (RCIP).

Of course some of this activity would have happened without the WSIS, but the WSIS raised the profile of information

society building and attracted new finance. In particular, the WSIS Outcome Documents highlighted the importance of ICTs for helping to meet the Millennium Development Goals (MDGs), as discussed in **Section 1.5.2**.The term digital divide, which means grossly unequal and inequitable access to the benefits brought by modern ICTs, has been current for several years. WSIS tried to replace the somewhat negative objective of closing the digital divide with the more positive idea of pursuing digital opportunities for everyone. WSIS set in motion follow-up procedures and annual reports, which include assessing progress. An early assessment is given in the Practice Note *The prospects of achieving the WSIS targets, 2005*. A fuller discussion of many possible indicators is in *Partnership on Measuring ICT for Development: Core ICT Indicators*.

Practice Notes

- **The prospects of achieving the WSIS targets, 2005**
- **The WSIS principles and commitments, 2003 and 2005**

Reference Documents

- **Partnership on Measuring ICT for Development**

4.1.5.2 THE MILLENNIUM DEVELOPMENT GOALS

The eight Millennium Development Goals (MDGs) relate to different aspects of human development [1]. The eighth MDG articulates the need to "develop a global partnership for development," and includes a specific target, "18: in cooperation with the private sector, make available the benefits of new technologies, especially information and communication," with indicators drawn from Partnership on Measuring ICT for Development: Core ICT Indicators (measuring telephone lines, cellular subscribers, personal computers in use and Internet users per 100 inhabitants). The extent to which ICTs should be deployed in support of other MDGs has been controversial as it was questioned whether money spent on ICT was taking away resources for more urgent needs such as clean water, health and education etc. [2]. But, the debate in the 1990s of choosing between ICTs and other development imperatives has now shifted from one of tradeoffs to one of complements [3]. With each year that passes, as ICTs improve and people become better equipped to make the most of them, this shift towards seeing ICT as complementary is likely to increase. In fact, ICT deployment could support each of the MDGs, as is shown in the Practice Note Examples of the role of ICTs in supporting the MDGs in Asia. Development specialists stress that for ICT to make a positive contribution to poverty alleviation, the following are essential considerations:

- A well thought out development strategy should come first;
- Information and communications needs for implementing the strategy should be identified; and
- ICT should be deployed appropriately to meet these needs.

Telephone service almost always has clear benefits for the poor, while Internet and advanced services need to be deployed as a tool for specific development goals. Many case studies are provided in Information and communication technologies for poverty alleviation. In the past, there were too many examples of the ICT arriving first, with the tail wagging the dog or a solution looking for a problem. To avoid this, the development-strategy-led approach now points to the inclusion of ICT goals in Poverty Reduction Strategy Papers, in order to ensure the availability of ICT as and when needed for poverty reduction [4]. This has been done in Rwanda, for example [5]. The reference document Good practice paper on ICTs for economic growth and poverty reduction points out that ICTs can support progress towards the MDGs through the following main routes:

- Empowerment and the Poverty Reduction Strategy Paper process;
- Efficiencies in service delivery; and
- Livelihood enhancement.

Practice Notes

- **Examples of the role of ICTs in supporting the MDGs in Asia**

Reference Documents

- **Good Practice Paper on ICTs for Economic Growth and Poverty Reduction**
- **Information and Communication Technologies for Poverty Alleviation**
- **Partnership on Measuring ICT for Development**

4.1.6 INTEGRATION WITH OTHER NATIONAL PROGRAMMES

Universal access and service (UAS) policies do not exist in isolation, they are relevant to education, e-government, electricity, and micro-finance and e-banking, among others. However, overarching national policy on ICT development should provide overall direction and facilitate and define the inter-linkages among the various sectors, policies, stakeholders and initiatives. ICTs are especially important for education, but voice alone is a limited medium, telephony and radio broadcasting are not enough in the context of dynamic education. In consequence, universal access (UA) generally means "universal Internet access", and increasingly, "universal broadband Internet access". Many UAS policies include the provision of Internet access to schools, often partially paid for by Universal Access and Service Funds (UASFs). However, while Internet access for schools might be paid for by UASFs, making effective use of the access is the responsibility of the school, the ministry of education and others. The task of training teachers and providing enough useful and appealing content is particularly significant.

The relation between UAS and educational development programmes is considered in further detail in **Section 1.6.1**.E-government is the use of ICTs to make government more responsive, efficient, effective, and transparent. The conditions within a country, including communications infrastructure and public access, transparency of governance, but also government capacity and public literacy, affect what is worth attempting in e-government.

These conditions are considered in **Section 1.6.2**.Though electricity is essential for telecommunications, in some developing countries telecommunications are often more widespread or more reliable than the main electricity supply; network operators provide their own power generators and their customers find unorthodox ways of recharging equipment, e.g., through car batteries. Important benefits could be gained by co-ordinating the provision of telecommunications with the provision of the main electricity supply.

As discussed in **Section 1.6.3**, telecommunications networks would be easier to operate and use and could share physical infrastructure with electricity networks. While it is a highly desirable practice, this co-ordination might be difficult to achieve. However, this absence does not need to prevent telecommunications provision in places that do not yet have the main electricity supply. Financial services that deal with small sums of money (micro-finance) are widely believed to help people escape from poverty, for example, the Grameen Village Phone programme, provided women with loans to buy phones, sell phone calls, make profits and repay the loans. E-banking uses ICTs to make micro-finance available to more people in new, less expensive ways.

As discussed in **Section 1.6.4**, these initiatives raise regulatory challenges of their own, separate from those of telecommunications; customers must be protected against fraud but regulation must not prevent the development of valuable and trustworthy services.

4.1.6.1 EDUCATION

Education is a major part of all human development programmes. Achieving universal primary education is the second of the eight MDGs. The following four of the ten WSIS targets (for 2015) also relate to education:

- Target 2. Connect all universities and colleges, secondary and primary schools;
- Target 3. Connect all scientific and research institutions;
- Target 4. Connect all public libraries, archives, museums, cultural centres and post offices; and
- Target 7. Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances.

Education is a favoured area for funding and deploying modern ICTs [1]. The reasons for this include the following:

- ICTs record and distribute knowledge that people need to learn in a timely manner. Modern ICTs can maintain more up-to-date and accessible information than books, link teachers and pupils with their peers elsewhere (as in Singapore, where every classroom is connected to the Internet);
- ICTs provide interactive learning experiences which complement face-to-face teaching, and can remedy teacher shortages (e.g., by transmitting lessons to small remote groups of children or by enabling scarce specialist expertise to be shared);
- For an ever-larger number of people, ICT skills are essential to future employability;
- Children and young people everywhere take readily to new technologies. Long-term national ICT strategies naturally focus on equipping today's young people for the future; and
- As educated people and respected community members, teachers are often the first to perceive the benefits of

improved ICTs in their community and are instrumental in bringing them about.

As stated earlier, for education, voice alone is a limited medium, and universal access (UA) generally means universal Internet access, and increasingly, universal broadband access. Content to be accessed is a prime concern. When suitable educational content has been obtained, making it available on a non-networked basis (e.g., on CD-ROM) may be beneficial, as it can be used by more people and without occupancy of scarce or unreliable bandwidth; the Practice Note The eGranary digital library gives an example of this scenario. The widely publicized One Laptop Per Child initiative is an example of an ICT-for-education project focusing on terminals (with appropriate content) rather than on networks. ICT-for-education projects do not always require telecommunications networks end-to-end. Telecommunications networks, with video, could be used in remote teaching, teacher support and teacher training to help to overcome the shortage of teachers in rural and remote areas. However, the cost of implementation has to be compared with other ways to overcome the shortage, such as paying higher salaries. In several countries, universal access and service (UAS) and educational development programmes are linked to some extent. Two examples of these programmes are:

- In South Africa, connectivity and computers for school computer labs continue to be provided under the community service obligations of network operators; and
- In Uganda, a separate component of funding from the Rural Communications Development Fund (RCDF) is used for connecting secondary schools in rural areas.

It is useful for UAS policymakers and educators to communicate and cooperate in regards to educational development programmes. However, Universal Access and Service funds (UASFs) should focus mostly on connectivity and possibly hardware, while the ministry of education and schools need to ensure the effective use of that access through providing computers, content, training and support. Universities find Internet access particularly valuable because staff and students can build networks of contacts that bring about enhanced knowledge development and transfer. Universities have been leaders in the introduction of Internet access into education.

Practice Notes

- **The eGranary digital library**

4.1.6.2 E-GOVERNMENT

The term e-government (and its close relation e-governance) gets used in many different ways [**1**]. Broadly speaking, e-government is the use of ICT (or more narrowly, the Internet) to make government more efficient, responsive, effective, and transparent. In this context, government can mean any activity by officials at a national, regional, or local level, and can encompass whole development programmes, such as improving health or education, as well as day-to-day administrative activities [**2**]. Governance and the Internet underlines how conditions within a country affect what it is possible or sensible to attempt in e-governance, with illustrations from Asia.The most popular use of the term e-government in developing countries may be applying ICTs to make administrative transactions, such as getting certificates or permits, or registering a birth or death, more accessible to citizens and less prone to corruption: citizens make fewer journeys, complete fewer forms and meet fewer officials. This approach has been pioneered in India, to modernise procedures suited to a different era and way of life [**3**]. Successful e-government projects [**5**] sometimes get more publicity than unsuccessful ones, but it is important when developing UAS policy to take lessons from both [**6**]. The reach of e-government depends on the availability of infrastructure, and in some cases e-government projects provide or contribute to this availability. However, e-government has many other requirements besides the availability of infrastructure; they may jointly be called e-readiness. To ensure that e-government applications are matched to the readiness to accept and use them, they should often be introduced in stages. The Practice Note A staged approach to developing e-government shows stages suitable for the least developed countries.

Practice Notes

- **A staged approach to developing e-government**

Reference Documents

- **GOVERNANCE AND THE INTERNET**

4.1.6.3 ELECTRICITY

Electricity is extremely relevant to Internet and broadband development, as end-user terminals such as computers require much more power than mobile phones. While telephone networks and use has not been stopped by the lack of public

power infrastructure (though the lack has increased cost and slowed speed of network development), further Internet and broadband development and geographical spread will depend highly on increasing national electrification as a pre-condition. *The Energy Challenge for Achieving the Millennium Development Goals* does not expect universal access (UA) to electricity before 2030 (and possibly much later in rural areas of some least developed countries,) yet it stresses that electricity makes a huge contribution to achieving the MDGs. Without electricity to power hospitals and schools, health and education objectives become difficult to achieve. Households quickly acquire simple electrical appliances as a high priority once an electricity supply is available; electric lights or fans enhance personal comfort and productivity, televisions entertain and inform. It is hard to imagine a comfortable lifestyle in the modern world without electricity. There are several important links between electricity supply and telecommunications:

- Most obviously, the lack of electricity supply raises telecommunications network costs significantly, so funding universal access and service (UAS) in areas without electricity supply represents an additional burden on the budget;
- There is often potential for shared backbone infrastructure. Power poles and ducts can carry optical fibre alongside the power cables at low marginal cost, indeed, recently installed power systems are very likely to include optical fibre for the use of the power company;
- There is sometimes potential for shared access infrastructure. Local telecommunications distribution can occasionally use Power Line Communications (PLC), in which the power cables themselves carry telecommunications. However, the technology has to date been used too little to become sufficiently general and inexpensive; and
- Community capacities developed by local participation in distributed electricity generation (such as solar or micro-hydro schemes) could also lead to community demand for, and provision of, communications facilities.

As people generally give higher priority to electricity supply than to telecommunications, one might logically expect that electricity supply would arrive in a community first. When this happens, telecommunications follow more easily, however, often the reverse is true. Network operators install base stations complete with their own primary generators (not just the standard backup generators), and people show great ingenuity in keeping their mobile phones charged (e.g., by using car batteries or taking phones in batches to nearby towns for recharging). Ideally, piecemeal ways of supplying power to terminals and network equipment would not be needed. Telecommunications and Internet could be provided in co-ordination with electricity generation and transmission, and the power requirements of telecommunications would benefit from efficiencies of scale. Such schemes would not need to cover the country; more local schemes, in which the points of consumption are close to the points of generation, might well have more acceptable environmental and other effects, and give both users and producers greater feelings of responsibility. Whether telecommunications provision and electricity generation and transmission can be coordinated in this way depends upon local circumstances. As a policy objective, coordination is desirable, however, communities may not accept delay in telecommunications provision just because they do not yet have the main electricity supply.

Reference Documents

- **The Energy Challenge for Achieving the Millennium Development Goals**

4.1.6.4 MICRO-FINANCE AND E-BANKING

This section looks at micro-finance, a leading application of ICTs, which can be provided through e-banking or m-banking.

Multi-stakeholder partnerships, including the public sector, the private sector and often non-governmental organizations (NGOs), are important for most development applications that exploit communications networks. However, the balance of public and private sector participation in the application programmes varies. Education and health applications are usually government-led, with strong NGO participation and some private sector partners. Other applications may be led by the private sector, with government and NGOs in support. Micro-finance is a good example of this type of application.

There is a widespread perception that appropriate financial services, including credit, savings, cash transfer and insurance, can help people work their way out of poverty. This is reflected in the "Nextbillion" initiative, which focuses on "development through enterprise" and provides a large database of activities that combine both business and development benefits [1]. The benefits often result from selling to poor people or production by poor people. Of the 16 Nextbillion activity classifications, six relate to financial services (and a further three to ICTs). The 2006 Nobel Peace Prize, awarded to Mohammad Yunus and Grameen Bank for pioneering achievements with micro-finance (and specifically with micro-credit for supporting small businesses), has raised the profile of this aspect of development.

The Grameen Village Phone programme was an early application of the Grameen Bank micro-credit services in Bangladesh. Suitably qualified women received loans to buy Grameen Phones so they could sell phone calls to their fellow

villagers and generate income from which they paid back the loans. Similar village phone schemes have followed in many other countries. It is a tribute to the extensive growth of the mobile market and the village phone programme itself that in Bangladesh the village phone programme may no longer be very profitable in areas where the market has matured and shared as well as individual access is now widespread [2].

Of course, financial services designed for poor people pre-date telecommunications access in rural areas. However, these projects can grow significantly along with wider telecommunications access. The synergies of telecommunications networks and financial services can be regarded as a form of convergence.

New ICTs make it possible to provide financial services in new, cheaper ways, and to more people. Several projects in developing countries are exploring how e-banking using ICTs can spread access to financial services. The Practice Note *Examples of financial services using mobile phones* explains some of the main models for m-banking and describes several specific examples in different countries.

The intensive development work on e-banking holds great promise for the future [3], however, financial services often inspire mistrust, sometimes with good reason (e.g., excessive interest rates on loans). E-banking raises challenges for regulation separate from those of telecommunications services. For instance, funds must be supervised to provide prudent protection from loss, but regulation must not be so great a burden on service providers that transaction prices would rise out of reach of the target customers. A similar situation has been resolved in some countries of the EU where mobile phone operators are not regulated as banks if only small funds are generated by prepaid cards and needed for customer transactions [4].

Ways in which telecommunications policymakers and regulators could integrate universal access and service (UAS) and micro-finance initiatives are as follows:

- Stay informed about rural financial service expansion;
- Keep abreast of emerging value-added services with a financial component offered by telecommunications operators or over telecommunications networks;
- Ensure that the responsibilities for regulating value-added services with a financial component are laid down clearly and understood widely. Financial regulators, not telecommunications regulators, might have the main responsibilities, but users will not be interested in the demarcation: they will expect to be protected adequately and are likely to see problems as defects in telecommunications services;
- Take part in any national working groups on expanding financial services or e-commerce for poor people. Cyber-security, and user identity management, are prerequisites for the development of e-commerce; and
- When formulating UAS programmes, aim where possible to support target areas and activities for financial services expansion.

Practice Notes

- **Examples of financial services using mobile phones**

Reference Documents

- **Mobile Phones for Microfinance**
- **The Transformational Potential of M-Transactions**
- **Using technology to build inclusive financial systems**

Next: 4.2 Regulatory Reform & Universal Access and Service ➔