

QUESTION 7-3/1

IMPLEMENTATION OF UNIVERSAL ACCESS TO BROADBAND SERVICES



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QUESTION 7-3/1:

*Implementation of universal access to
broadband services*



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In support of the knowledge sharing and capacity building agenda of the Telecommunication Development Bureau, ITU-D Study Groups support countries in achieving their development goals. By acting as a catalyst by creating, sharing and applying knowledge in ICTs to poverty reduction and economic and social development, ITU-D Study Groups contribute to stimulating the conditions for Member States to utilize knowledge for better achieving their development goals.

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Study Group 1

For the period 2010-2014, Study Group 1 was entrusted with the study of nine Questions in the areas of enabling environment, cybersecurity, ICT applications and Internet-related issues. The work focused on national telecommunication policies and strategies which best enable countries to benefit from the impetus of telecommunications/ICTs as an engine of sustainable growth, employment creation and economic, social and cultural development, taking into account matters of priority to developing countries. The work included access policies to telecommunications/ICTs, in particular access by persons with disabilities and with special needs, as well as telecommunication/ICT network security. It also focused on tariff policies and tariff models for next-generation networks, convergence issues, universal access to broadband fixed and mobile services, impact analysis and application of cost and accounting principles, taking into account the results of the studies carried out by ITU-T and ITU-R, and the priorities of developing countries.

This report has been prepared by many experts from different administrations and companies. The mention of specific companies or products does not imply any endorsement or recommendation by ITU.

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QUESTION 7-3/1

Implementation of universal access to broadband services

Abstract

This report is the result of work of the Rapporteur's Group on the Q7-3/1 during the period 2010-2013, with the assistance of BDT.

Chapter 1 outlines the mandate and terms of reference of the Q7-3/1 as adopted by WTDC-10.

Chapter 2 provides the updated definitions of universal access and service.

Chapter 3 describes the implementation of broadband services in 12 countries, in addition to the activities carried out by the BDT.

Chapter 4 describes patterns of coordination of different actors on broadband policies.

Methods and means of financing services and broadband access such as conducted in seven countries are shown in Chapter 5.

Chapter 6 presents the policy of training and human capacity building for broadband, especially in rural and remote areas.

As per Chapter 7, it contains different experiences for the development of local content and services in a number of countries.

Finally, Chapter 8 presents a summary of the guidelines for the implementation of broadband policies.

This report contains two annexes. Annex I provides a picture and references the various contributions submitted to the Rapporteur's Group and Annex II recalls the definition of Question Q7-3/1.

1 Question 7-3/1

1.1 Study of the Question

The World Telecommunication Development Conference WTDC-98 approved a question on universal access/service to be studied by ITU-D Study Group 1. The WTDC-02, WTDC-06 agreed on the importance of Universal Access/Service and requested that the Study Group members to continue with the Question with a renewed focus on broadband services.

The WTDC-10 decided that the issue of universal service was of considerable importance for all countries, particularly developing countries, and that it should be investigated further under a revised Question during the 2010-2014 study period. Question 7-3-1: "Implementation of universal access to broadband services" was approved for the study period 2010-2014.

1.2 Objectives of the Question

In many countries, unprecedented technological advances are being made in the telecommunication sector, with the development of wired and wireless broadband systems that can provide voice, video and data communication services. On account of these changes, broadband constitutes a roadmap for more effective development of this technology and its applications. The regulatory implications relate mainly to the following issues:

- Synergies among telecommunications/ICT stakeholders.
- Regulatory policy for broadband universal access and services
- Financing and allocation of funds for broadband universal service.
- Capacity building in rural and/or underprivileged communities.
- Development of local content, including services and applications.

1.3 Expected output of the study

During the ITU-D study period 2010-2014, the Rapporteur's Group on universal access/service examined various issues concerning the implementation of universal access to broadband services. To this end, a comprehensive analysis was made in order to analyse on the applicability and implementation of universal access policies in member countries. The following points were analysed:

- Optimum coordination among stakeholders in the development of broadband universal service (policy-makers, regulators, operators and other stakeholders).
- Diversification of means for financing broadband universal access.
- Optimizing funds and allocating them more effectively for broadband universal access to broadband services.
- Capacity building in rural and/or underprivileged communities.
- Development of local content, including services and implications.

1.4 Methods used

The Question was handled within the framework of Study Group 1.

First, documentary research into the issue being studied was carried out, as required, within and outside ITU. This approach generated an inventory of sources of information and documents relevant to the study. Reports from international and regional organizations, studies by consulting firms and research bodies were consulted.

Secondly, the Rapporteur's Group completed its analysis with empirical research. Here, the experience of member countries of the Rapporteur's Group and projects stemming from WSIS were the main sources of information used to analyse reasons for success or failure. This work was done by means of electronic exchanges and milestone meetings to discuss the content of the sources of input and the output document.

Given that the issue of universal access is related to other issues currently being studied or programmes being managed by ITU, coordination was done with other ITU-D's activities, with the other Questions being studied by the study groups, with the work being done in the other ITU Sectors. We suggest that the outputs of the study (report and guidelines) be distributed as widely as possible in accordance with ITU-D working methods. In addition, given the importance of this issue, BDT could also conduct regional meetings/seminars, perhaps in conjunction with regional telecommunication organizations, to disseminate the results of the study of the Question.

These results should be passed on to the annual ITU-D Global Symposium for Regulators whenever its themes include broadband universal access, convergence or broadband services, and should be published by ITU for wider distribution.

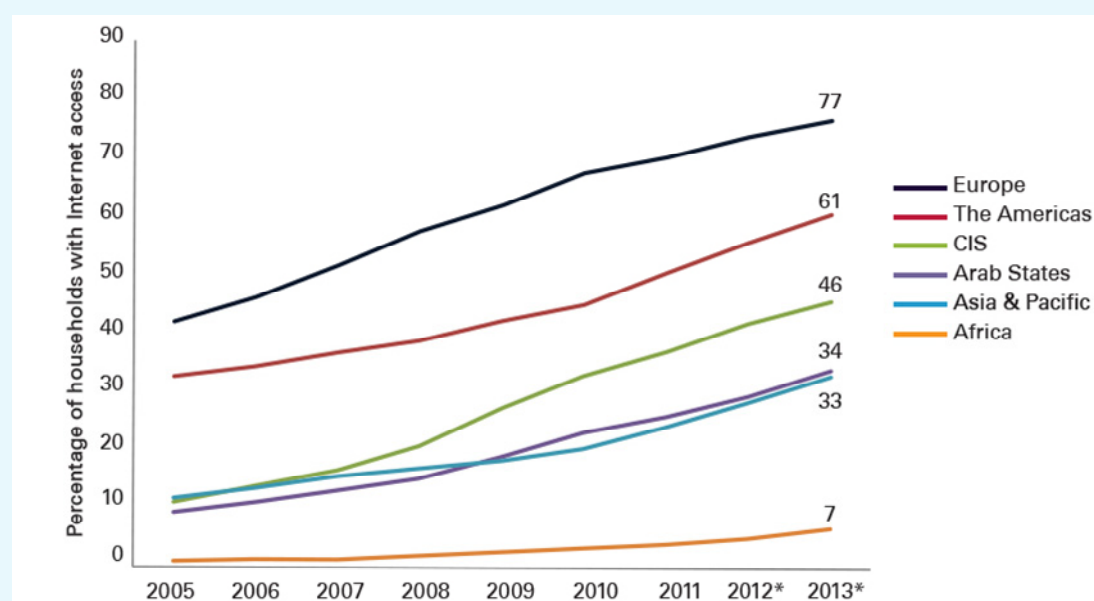
The draft final report and the proposed draft Recommendation(s) were submitted to Study Group 1 after a four years period, with an interim report after two years (September 2012) and an advanced draft final report in the third year of study (September 2013).

2 Broadband as a critical modern infrastructure

The Internet and other ICTs now constitute critical modern resources and are a vital prerequisite for participation in today's growing digital economy and which contribute to economic growth and promote job creation. Expanding access to broadband infrastructure and services is a top policy priority for ITU and many countries around the globe.

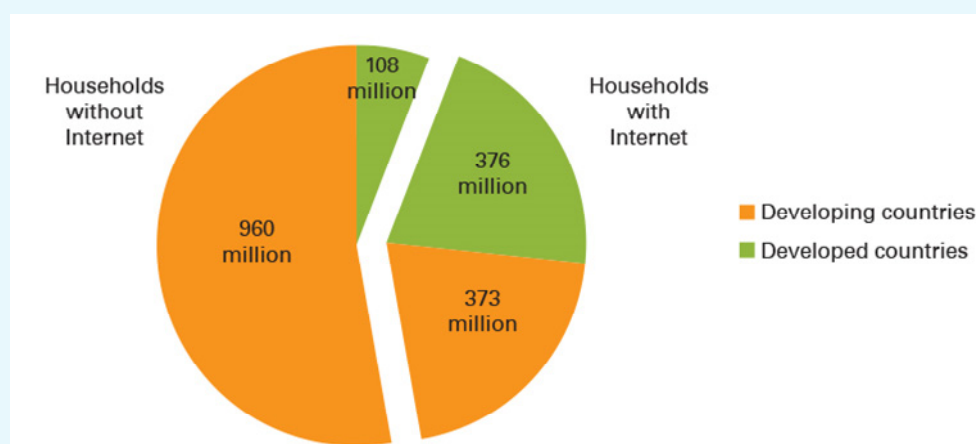
As part of its work, ITU announced in July 2013 the completion of a so-called G-fast standard for February 2014. This standard will achieve data rates up to 1 Gbit/s over existing copper wire telephone lines to deliver the same performance as fiber optics and at a lower cost.

Figure 1: Households with Internet access, by region



Source: ITU World Telecommunication/ICT Indicators database

The development of innovative policy frameworks, business models and financing arrangements needed to facilitate growth in access to broadband worldwide, stimulate content production in local languages, and enhance local capacity to benefit from and contribute to the digital revolution requires the involvement of all stakeholders the public and private sectors.

Figure 2: Households with Internet access, 2013

Source: ITU World Telecommunication/ICT Indicators database

2.1 Definitions of universal access, universal service, broadband and broadband services

2.1.1 Definition of Universal Access and Service (UAS)¹

The terms universal access and universal service though different, as stated in the *ITU-infoDev* ICT Regulation Toolkit on Universal Access and Service², are used in a wide variety of contexts to describe or demonstrate objectives and policies that governments implement to ensure that all their citizens have access to the benefits of modern economic life attributable to ICTs. Within this context, the key goal of a country's universal service/access policy is to develop the infrastructure and regulatory tools necessary to provide each member of its population with access to a point of communication. Thus:

- **Universal access** relates to providing communities with affordable access to ICTs. Universal access policies work to increase access to telecommunications on a shared rather than individual basis, such as on a community or village level.
- **Universal service** is aimed at increasing the number of households with telecommunication services and providing telecommunication services to all households within a country, including those in rural, remote and high-cost locations. Universal service policies focus on ensuring that the cost of telephone services remains affordable to individual users or to targeted groups of users (e.g. low-income families, people living in disadvantaged areas).

¹ Definitions taken from the *ITU-infoDev* ICT Regulation Toolkit Module 4
www.ictregulationtoolkit.org/en/Section.3126.html

² *ITU-infoDev* ICT Regulation Toolkit, Module 4: Universal Access and Service, available at:
www.ictregulationtoolkit.org/en/Section.3126.html

In most countries, the scope of universal access and service (UAS) previously included the provision of basic telephony. However, the scope of UAS is evolving to include Internet connectivity and broadband as technology develops and countries come closer to reaching their goals for voice service availability. Radio and television broadcasting have traditionally not been included in the definition of UAS, but this is also changing rapidly due to convergence, that has allowed telecommunication networks to be used for Internet broadcasting, and some broadcasters to offer Internet and telephony services (e.g. cable TV operators).

The ITU 2003 *Trends in Telecommunication Reform Report* clearly articulated three main dimensions that characterize Universal Access and Universal Service³:

- **Availability:** This relates to whether there is national coverage of ICT services (telephones and internet). That is, the level of access to communication service is the same wherever a person lives or works, with no disadvantage stemming from geographic location. In particular, rural and urban distinctions do not affect a person's ability to access communication services. In this information age, the quality of services is even more important as are policies that promote the growth of ICT networks, innovation, and the use of new technologies that reach the last mile.
- **Affordability:** National governments design policies and regulatory frameworks that include Universal Service Funds to address the challenges of network expansion. The goal is for everyone to be able to afford service, and no one is disadvantaged by income level. Cost variations due to location, terrain or climate, which often dovetail with urban/rural factors, do not impact one's access to ICT services.
- **Accessibility:** People with disabilities can use the service; one's level of physical and mental ability does not affect access to communication services. Policy makers must also take into account the *relevance* of content and applications and the ability of users to understand it.

2.1.2 Definition of Universal Broadband Access/Service

Broadband is defined in terms of speed of transmitting data (minimum data rate) or a certain set of services, such as digital subscriber loop (DSL) or wireless local area networks (wLANs). Initial definition described as narrow broadband allowed access to internet using traditional modems of 56 Kbit/s.

The ITU Standardization Sector (ITU-T) recommendation I.113 has defined broadband as a "transmission capacity that is faster than primary rate Integrated Services Digital Network (ISDN), at 1.5 or 2.0 Megabits per second (Mbit/s)".

National governments have adopted different minimum bandwidths and maximum latencies ranging from this minimum of 256kbit/s up to 4.0Mbit/s. The trend is to raise the threshold of the broadband definition as the marketplace rolls out faster services.⁴

In general terms, broadband refers to telecommunication that provides multiple channels of data over a single communications medium, typically using some form of frequency or wave division multiplexing. In relation to the Universal access/service, broadband access/service refers to the initiatives/programmes

³ 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 (*ITU-infoDev ICT Regulation Toolkit*, Module 4).

⁴ For instance in the **United States** (US) Federal Communications Commission (FCC) as of 2010, defined "Basic Broadband" as data transmission speeds of at least 4 megabits per second, downstream (from the Internet to the user's computer) and 1Mbit/s upstream (from the user's computer to the Internet)⁴. The **Finnish** Ministry of Transport and Communications issued a decree on 16.10.2009 that, starting with 1 July 2010, a 1Mbit/s Internet connection will be defined as a requirement of the Universal Service.

that ensure that all citizens are served by emerging broadband technologies. Such initiatives include the roll out of networks that allow the delivery of an entirely new breed of media services and communications-oriented applications. Broadband is increasingly regarded as being central to the development of an information and knowledge-based society able to leverage information and communications technology (ICT) for national development and achieving “digital inclusion” across the spectrum including remote, regional and rural areas. An example of broadband services include the provision of Digital Subscriber Line (DSL) and cable TVs.

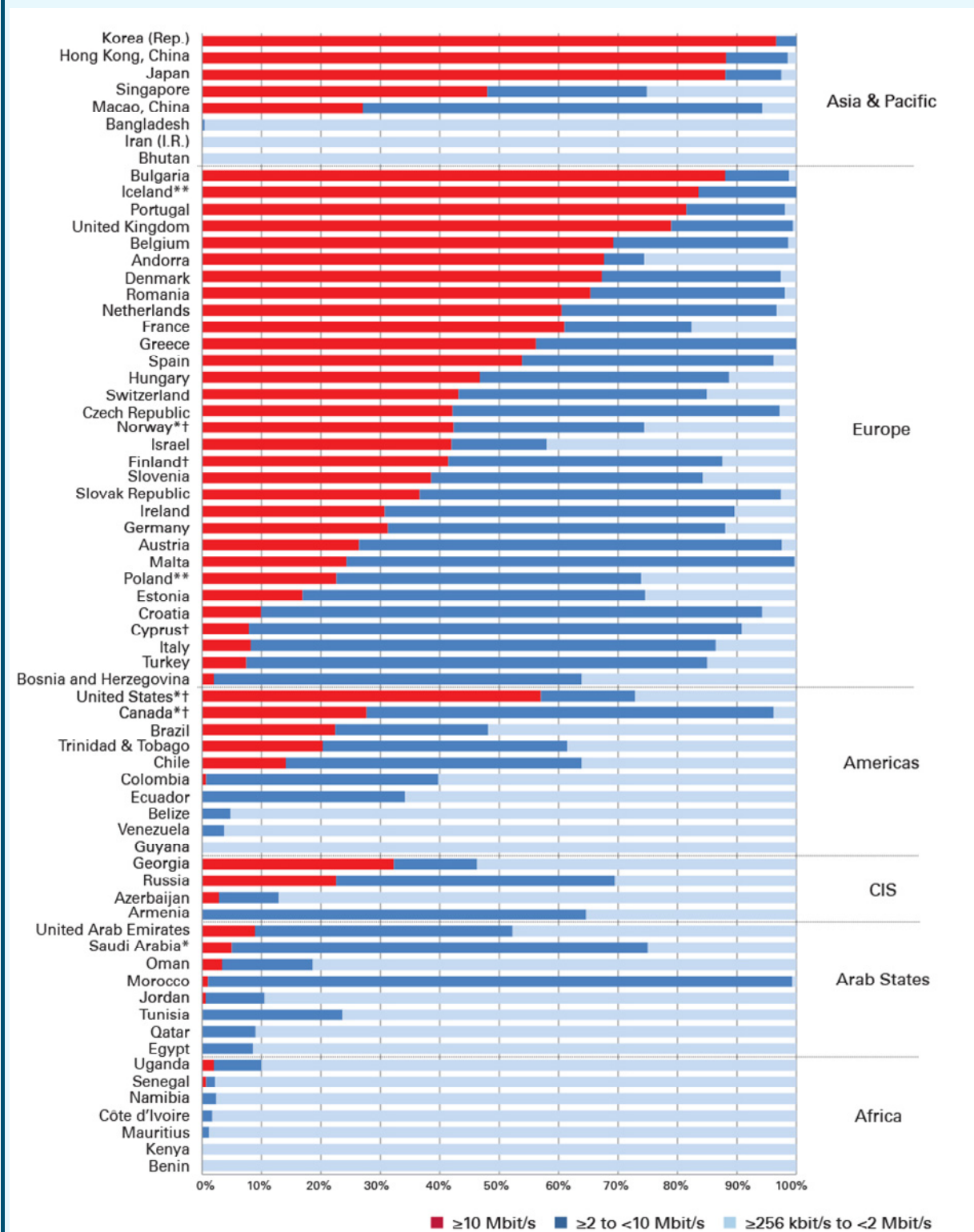
Broadband as a service has the potential technical capability to meet consumers’ broad communication, entertainment, information, and commercial needs. Broadband helps deliver a range of critically important services such as e-Commerce, e-Health, e-Education, e-Entertainment, and e-Governance.

70-80 per cent of online Internet users in different industrialized and emerging countries agree that Internet access should be “a fundamental right for all people”, and more and more countries include broadband in their definition of Universal access/service.

2.2 Benefits of broadband

By expanding universal service policies beyond traditional telecommunications services to support ICT/broadband programs, emerging countries can reap enormous dividends. This is primary so given that broadband speeds are significantly faster than previous technologies, making it faster and more convenient to access information or conduct online transactions using the Internet. The speed of broadband service has also enhanced existing services, such as online gaming, and enabled new applications, such as downloading music and videos. However, differences in broadband speed exist in the regions of the world.

Uptake of high-speed broadband (at least 10 Mbit/s) is highest in some Asian economies and in several European countries. In Africa, less than 10 per cent of fixed (wired) broadband subscriptions offer speed of at least 2 Mbit/s. This is also the case of several countries in Asia and the Pacific, the Americas and some Arab States. Figure shows the fixed-broadband subscriptions, by speed, early 2012.

Figure 3: Fixed broadband subscriptions, by speed, early 2012

Source: ITU World Telecommunication/ICT Indicators database

Depending on the type of technology deployed, there can be economic gains associated with broadband. For example, with DSL, users can use a single standard phone line for both voice and data services.

The benefits of broadband are profound ranging from opening up young minds to new horizons through educational technologies to transformation of entire industrial/business models up to including the provision of government services⁵. Others include:

- Empowering women to expand their opportunities through genuine choices;
- Improving awareness of hygiene and healthcare; and
- Helping family breadwinners find work, a better salary or return on their goods.

Through broadband, the provision of public services is transformed to make them global public goods and services for consumption by all. Greater access to the Internet and broadband applications and services help accelerate achievement of internationally-agreed development goals, including the Millennium Development Goals (MDGs)⁶.

Along with these direct and indirect economic benefits, deploying broadband services provides additional benefits, including:

- **Access to information and resources:** Broadband technologies enable rural and remote communities to overcome geographical constraints and gain access to regional and worldwide social, political, economic, and financial information and resources.
- **Improved social services:** PCs, tablets, androids as well as broadband connections (wired and wireless) provide access to online training and information that can help rural and remote communities improve healthcare, education, e-government services, and other social services, while also improving local economies.
- **Wider market opportunities:** With broadband access, new business models can emerge and businesses in geographically remote markets can reach a wider range of potential buyers.
- **Greater business productivity:** Broadband related services such as e-mail and VoIP enable local businesses to lower costs and improve revenues.

To achieve these and other benefits, market forces alone are not sufficient, especially in emerging countries. ICT and broadband penetration rates need to increase quickly, and reliable broadband services must be made available to the majority of citizens at an affordable price. Such changes can only take place with organized and sustained ICT/broadband programs—which can be supported by universal service policies.

⁵ For example, the World Bank reports that, in low- and middle-income countries, every 10 percentage point increase in broadband penetration corresponds to an increase in economic growth of 1.38 percentage points – more than in high-income countries and more than for other telecommunications services

⁶ Taken from the final declaration of the Broadband Leaders Summit 2011

2.3 National broadband/ICT plans: Policy objectives for success⁷

Broadband is essential for generating new skills and generating economic growth and technological change across the entire economy – from agriculture to finance, education, healthcare and modern services. Incentives are needed to build out broadband infrastructure, encourage the development of broadband-enabled applications and services, and build ICT skills and technological capabilities among firms. The development of National Broadband Plans (NBPs) and Universal Service Policies are one of the possibilities and key factors for the acceleration of nationwide availability of affordable broadband. Specifically, technology and competitively neutral subsidies are important ingredients to help bridge the digital divide and enable the benefits of broadband for all.

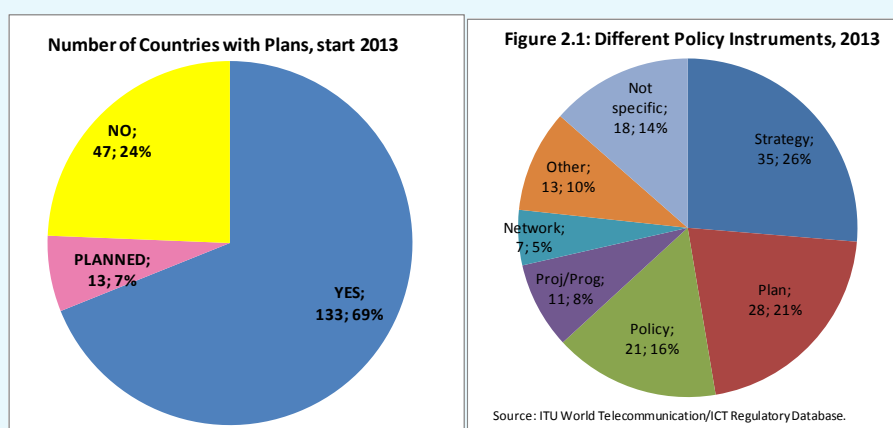
Through the NBPs, the Policy-makers can play a powerful role in spurring broadband adoption by focusing on policies that:

- maximize the positive outcomes (such as innovation, investment, access to information); and/or
- prevent negative activity (e.g., unfair pricing, consumer exploitation, breaches of privacy).

A Plan is a statement of clear vision for the development and future evolution of broadband, both as a sector in its own right, and with consideration of its relationship with other sectors. Plans vary in their goals and policy recommendations and use different terminology, but converge on the objective of increasing broadband and ICTs in order to advance the economies of the respective countries.

Figure 4a: Number of countries with national broadband/ICT plans and different policy instrument to introduce National Broadband Plans

Figure 4b: Overview of different policy instrument to introduce national broadband plans



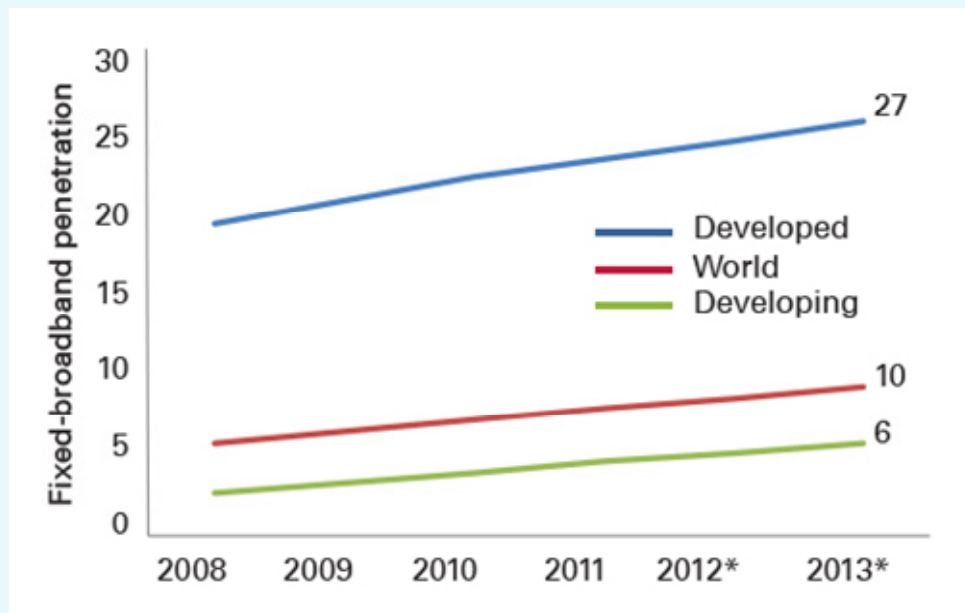
Source: ITU World Telecommunication/ICT Regulatory Database; *The State of Broadband 2013*

⁷ Partly taken from the Broadband Commission paper “Planning for progress: Why national broadband plans matter” available at: www.broadbandcommission.org/documents/reportNBP2013.pdf.

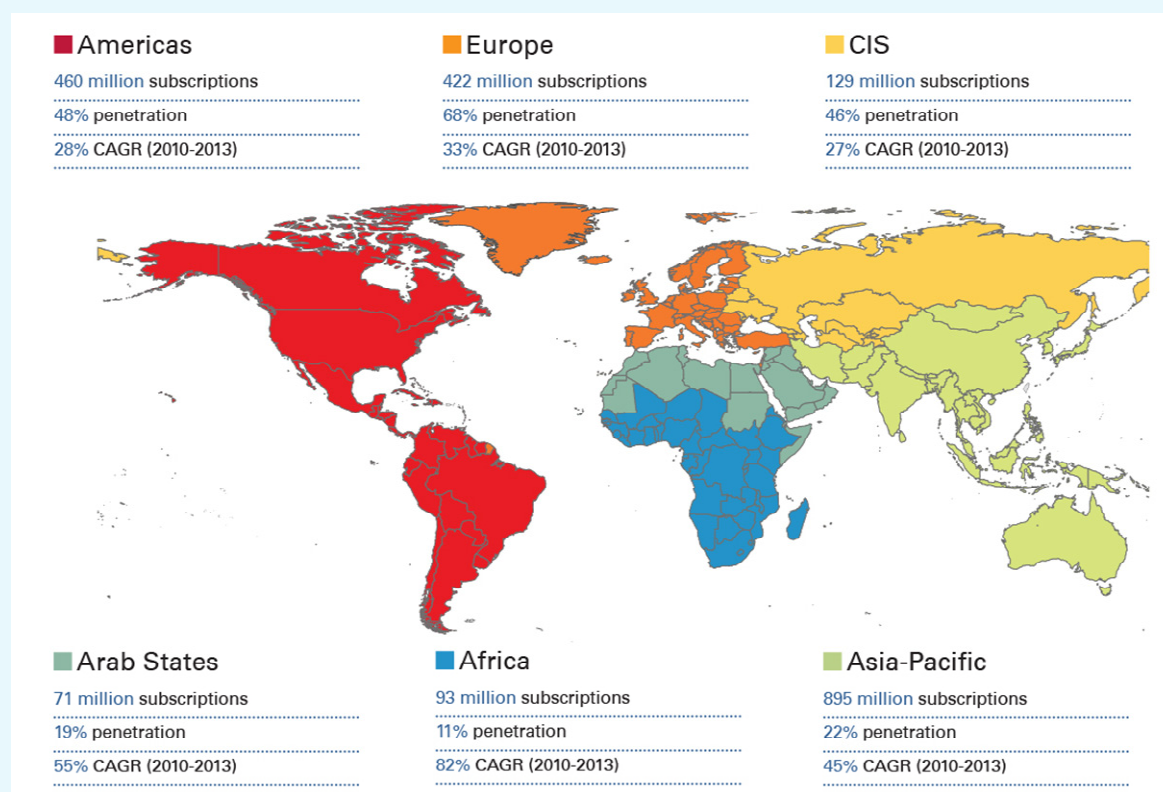
In order to ensure that National broadband plans produce strategic results it is important to identify and set specific, measurable, attainable, relevant, and time bound (SMART) objectives of rolling out broadband access initiatives – accompanied by mechanisms for tracking and reporting progress on a regular basis (e.g. every year), as appropriate for each objective.

The following figures show the evolution of the fixed broadband penetration and the chart of the mobile broadband subscriptions divided by regions.

Figure 5: Fixed broadband penetration



Source: ITU World Telecommunication/ICT Indicators database

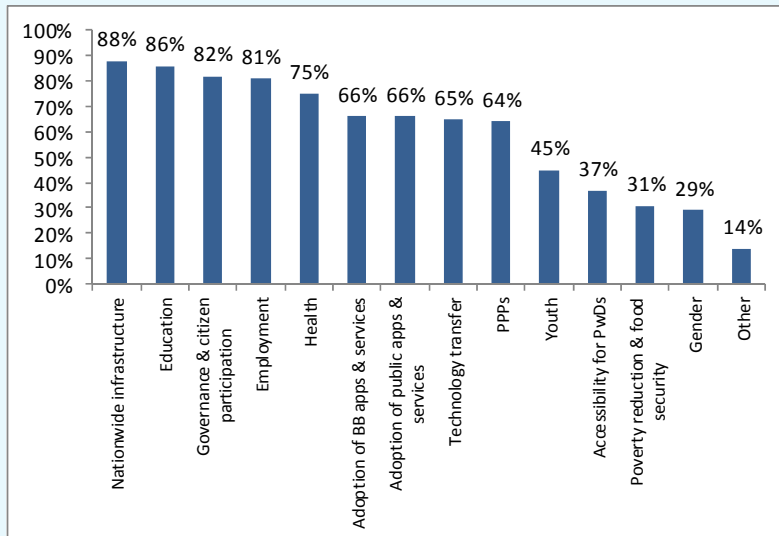
Figure 6: Mobile broadband subscriptions

Source: ITU World Telecommunication/ICT Indicators database

For developing countries, a National Broadband/ICT Plan's objectives initially may focus on using USF to expand support of broadband service and adoption to community centers, Internet kiosks, or other public places. While this may be a valuable first step, national governments are encouraged to set objectives for establishing a USF to support broadband service to households over the long term.

Three-quarters or 75 per cent of the national broadband plans address health and healthcare. Also, PPPs and technology transfer are referenced by six out of ten Plans, while accessibility, poverty reduction and gender are referenced only by a third of all Plans (Figure 7). It is anyhow evident from these figures that broadband is of vital importance as a cross-cutting platform for the delivery of services in many other sectors

Figure 7: What exactly do national broadband plans focus on?



Source: Adapted from ITU World Telecommunication/ICT Regulatory Database, the Secretariat of the Broadband Commission.

Box 1: Characteristics of a Good Plan

Best practice cases for broadband plans are by now broadly well-established. In his chapter for *Trends in Telecommunication Reform 2012*,⁸ Horton (2012) suggests that Plans should:

- Escape ‘silo thinking’ and apply across a range of different sectors;
- Make the case for broadband, specific to the needs and economic structure of that country, based on thorough market analysis and benchmarking;
- Be developed in consultation and based on consensus with a broad range of stakeholders. However, to ensure effective implementation, they should also assign a coordinating agency responsible for implementing the plan overall which nevertheless ‘owns’ the Plan, in conjunction with other involved bodies⁹);
- Consider the vital issue of enforceability/execution. Who is responsible for enacting the Plan? Who will monitor progress? How will implementation be funded?
- Consider both demand and supply side considerations. This may mean supporting the development of human skills, literacy, and demand among, for example, schools and SMEs, as well as taking into account the role of Government in driving demand in many developing countries;
- Be forward-looking over a **timescale** of maximum 3-5 years (as longer time horizons may be difficult to predict in a fast-changing industry).
- Be broadly **technology-neutral**. Plans can include technology-specific measures (for example, consideration of spectrum issues to facilitate the roll-out of mobile broadband). However, there should be no major implications in terms of favouring specific technologies over others.
- Contain detailed, measurable **goals and strategies** to allow evaluation of progress. They may often also contain consideration of ‘special interest groups’, such as schools, hospitals, universities, diverse languages and access by minorities or people with specific needs.
- Address **related legislation** – e.g. privacy and data protection, security and digital signature, Government Interoperability Framework to ensure that e-government systems all work together.
- Probably the hardest balance to strike is the balance between high-level strategic direction and detail, as it contains important options and input, but allows the various implementing agencies some flexibility in how they should go about implementation.

Source: Adapted from Dr. Horton’s chapter (2012) in ITU *Trends in Telecommunication Reform 2012*.

2.4 Development of local content, including services and applications

2.4.1 Definition of local content

There is no uniform definition of local content. However, the general understanding of local content is that it includes any type of material, including written text, imagery, video, charts, graphs, lists or other data that has been created for a specific geographic audience. Thus, it typically connotes geographically-

⁸ “Setting National Broadband Policies, Strategies and Plans”, chapter by Dr. Bob Horton, *Trends in Telecommunication Reform 2012*, ITU, Geneva, available at: www.itu.int/ITU-D/treg/publications/trends12.html.

⁹ T. Kelly, and C.M. Rossotto. *Broadband Strategies Handbook*. World Bank publications; 1 edition, 2012. <https://openknowledge.worldbank.org/handle/10986/6009>.

oriented digital material published on websites for end users within that community. According to UNESCO, 2001¹⁰, local content must be relevant and comprehensible to local internet users.

2.4.2 Services and applications

The development of services and applications for content dissemination has evolved over years with data services on mobile networks getting much closer to their wired counterparts – allowing relatively unfettered access to Internet-based content. Mobile handsets themselves have evolved to become much easier to use to create and distribute content. Nowadays, “smartphones” often run sophisticated operating systems that were available only on computers before – and feature content tools such as quality cameras. Popular mobile operating systems allow users to take content on their mobile phone and share it easily with others using social media, e-mail or SMS. These “smartphones” have become common in developed countries and are increasingly now used in developing countries. The use of has helped promote the use of mobile broadband for content delivery and especially through the newly created online stores directly to mobile devices-the largest digital media stores.

2.4.3 Frameworks for development of local content

The development and growth of local content varies from one country to another depending on the status of development of enabling factors such as the level of Internet infrastructure development, the roll out of broadband and availability of compatible ICT equipment. Development of local content is undertaken by both the private sectors who design the services and applications and the Government and general public who provide data and consume the services. The Government has been identified as an important “anchor tenant” for broadband and can help create demand through its services and by supplying affordable broadband in schools and universities. However, creating local content, recording and distributing it, benefits from a specific set of skills and tools, capacity building in ICT for the general public and private sector is vital. In addition to Internet connectivity, ICT equipment such as computers, mobile phones, cameras, scanners and audio/video recorders are important tools for digital content creators.

2.5 Factors that influence both the demand of broadband services and the deployment of broadband networks

One of the key determinants of affordability, adoption and usage is pricing. Prices cannot be just regulated to increase Broadband adoption faster. Price intervention in broadband markets, this is a risky proposition and potentially damaging to the long term development of those markets (ITU Broadband report – Regulating prices). In fact there are few options to reduce the broadband prices considering the investments involved in developing access infrastructure and costs of international bandwidths. In view of this, innovative special package of broadband plans with access to – in respect of Agriculture, Education, Health, E Governance etc., which are important to build social capital, may be considered to offer the service at a cost effective price. As this reasonably excludes cost component due to international bandwidth prices, the Broadband service may be more affordable to serve the fundamental needs of general masses.

Factors that influence the demand of broadband services:

- Broadband service price
- Income levels (Affordability)

¹⁰ UNESCO (2001), "Public Service Applications of the Internet in Developing Countries, Promotion of Infrastructure and Use of the Internet in Developing Countries.", UNESCO, Paris)

- Socio-culture aspects
- Price of related Internet applications (Accessibility)

Factors that influence the supply of broadband networks:

Cost of network deployment. Broadband service providers seek profitability; accordingly cost consideration is essential in any investment decision.

Technology limitations; significantly influence the broadband network deployment.

Governmental and regulatory policies

At the level of the Government, national policies can stimulate broadband, such as tax reductions, and stimulus programs that provide funding for deploying broadband networks. The Government can also stimulate the demand for service by providing ICT training programs for businesses and citizens, encouraging e-programs such as e-Government, multi-purpose community, telecenters, and other sectoral initiatives like e-Education and e-Health.

Telecommunication regulators can use universal service funds to encourage network deployment in economically disadvantaged areas. In addition, proper management of scarce resources, (e.g., spectrum) and effective regulations that encourage competition play a vital role in the supply side. These regulations include putting in place frameworks that aim to maximize the use of spectrum, sharing of infrastructure and facilitating right of ways and the use of other utilities networks.

3 Implementation of universal access to broadband services

How countries implement universal access to broadband services is explained in this section. An overview of the ITU project on “Wireless Broadband Master Plans in the Asia-Pacific Region” is also provided.

3.1 Switzerland

High-speed access in Switzerland – situation in 2011 and framework for public intervention

High-speed access penetration: fixed access (according to households): ADSL: ~ 98%, VDSL: ~ 80%, TV cable networks: ~ 85%. Mobile access (according to the population): EDGE: ~ 99.8%, UMTS: ~ 92%, HSPA: ~ 92%.

The situation in 2011 of high-speed access: market offerings:

In Switzerland, several access networks co-exist. Several operators sell service offerings, consumers have a choice of high-speed access which, although not massive, represents real choice.

The situation in 2011 of high-speed access: market demand

- 77 per cent of households have internet access at home.
- Marginal progress is limited: 20 per cent of households state they do not want or do not need the internet at home.
- More than 90 per cent of households connected to the internet have high-speed access: approximately three quarter of households via ADSL, the other quarter via cable TV.
- The other forms of access play a marginal role (e.g. FTTH or PLC).
- The digital divide (according to age, income, education, etc.) is closing. Age is the criterion which continues to best explain the differences in internet use.

High-speed access policy in Switzerland – the major orientations:

The State has no high-speed policy in the classic sense of the term. The State has merely formulated broad principles and created and put in place a framework for public intervention.

High-speed access policy in Switzerland: the key principles

- The liberalisation of the market has led to a paradigm shift. Now it is up to market forces to meet demand. The State intervenes essentially to address any failures of the market.
- Two types of action are provided for in the sphere of telecommunications: regulation of access to resources by alternative operators. The universal service.
- In addition, the State has drawn up a strategy 'for the information society'.

High-speed access policy in Switzerland: access regulation (wholesale market):

Rules allow for correction of the inequality in competitors' relative strengths. There is an obligation on the dominant operator to provide its competitors with access to its resources and services (e.g. interconnection, local loop) subject to conditions.

High-speed access policy in Switzerland: the Universal Service (retail market)

- Periodic licensing of the universal service (US) licence. Guaranteeing provision throughout the territory and to all categories of the population of a minimum set of services at affordable prices and to a specific level of quality.
- A license granted to the historic operator on 1 January 2008 for a term of 10 years. Decision, as early as 2006, to introduce into universal service the provision of a high-speed connection subject to a price ceiling. Prescribed minimum rates: 600/100 Kbit/s (download/upload). In 2011, there was a political process under way to increase the data rate to 1 Mbit/s.
- The provision of US has not necessitated a requirement for specific funding.

Regulation in the face of the challenges of the future: A role to be reinvented for the regulator

The Swiss regulatory body has organized since 2008 eight round tables on fiber to the home (FTTH). The objective was to encourage investment by bringing together key players and by coordinating everything for FTTH deployment that can be coordinated on a voluntary basis. In mid-2011 a working group on NGAs was established by The Swiss regulatory body to deal with any coverage-related problems by monitoring developments on the ground and identifying best practices.

3.2 Mongolia

National Broadband Program of Mongolia

The National Broadband Program of Mongolia (2011-2015) was approved by the Government on 3 May 2011. The goal of the program is to support national economic growth and livelihoods of the citizens by establishing a high-capacity, high-speed broadband network to deliver an accessible, low-cost service to all government agencies, businesses and households, especially for rural and remote areas.

With accomplishment of the objectives, the following outcomes are expected by 2015:

- A favorable legal, regulatory and conducive business environment for a high-speed broadband network.
- Indicators for broadband development (speed, price and use) will be above the global average.
- No less than 90 per cent of government organizations, education and health agencies will have access to the high speed broadband network.
- At least 50 per cent of all households will have access to cheap triple-play service through broadband.
- Over 40 per cent of households in remote and isolated populated areas will have access to a wireless broadband service.

Key principles for program implementation in Mongolia:

1. Government support to establish a high-speed broadband network, and enhance the business environment.
2. Use of foreign loans and aid, specific discounts and incentives for service providers to deliver services to isolated rural areas, specifically:
 - A policy of discounted taxes. Reduction of import and customs duties for equipment and technology products to establish and expand the broadband data network.
 - Support for access to long-term soft loans. Subsidization of losses in transmission network from the Universal Service Obligation Fund (USOF).
3. Government support for increasing use of broadband networks and content development, involving training courses, promotional activity and fund mobilization.
4. Expansion of the existing network to rural areas and Ulaanbaatar's peri-urban areas.

3.3 Brazil

Despite the economic growth of recent years, overcoming social and economic inequalities continues to be a challenge in Brazil.

The digital divide remains wide and the penetration of household broadband access is still very low. As a result, paid public Internet access centers, known as lanhouses, have multiplied. These establishments act as digital inclusion instruments, creating opportunities for citizen participation and involvement in cultural, educational and leisure environments through the use of information and communication technologies. Lanhouses (cybercafés) have proliferated mainly in areas where poor infrastructure prevents the local population from accessing the Internet any other way. They tend to be family-based, informal and usually engage in a wider range of other commercial activities. They have become important providers of broadband Internet access and play a significant role in local communities. The Brazilian experience shows that the lanhouse proliferation phenomenon occurs when the lack of infrastructure, combined with excessively expensive equipment and Internet access services creates barriers that prevent citizens from obtaining broadband access to the Internet. The importance of these centers resides in the wide range of users they bring into the digital world, in particular the youngest from the lower classes, which would be excluded from accessing the Internet were it not for their existence.

The relatively low proportion of households that enjoy Internet access in the country would have been a barrier to the increase in Internet users, were it not for the development and growth of these digital inclusion agents. Lanhouses play a complementary role to the one assigned to governmental public bodies, implemented mainly through its Public Telecenter policies. The role of paid Internet access centers as agents for digital inclusion in rural areas is even more prominent than their role in urban areas.

Challenges faced by lanhouses in Brazil:

The first aspect is the legal status of these businesses. The commercial activity of lanhouses is rooted in informality, which limits the potential access of these small entrepreneurs to credit lines. Also, some lanhouses claim to be duly registered and formalized, but are registered as legal entities that belong to a different commercial segment, e.g. “micro-entreprises” or “family business”. The second key aspect relates to the role lanhouses must play in their local communities, especially by providing diversified and innovative services. The third aspect relates to the management model adopted by lanhouses. There is the need to join efforts with other agents, to promote training for these small-business owners.

Development of a legal framework:

The findings of the ICT Lanhouses 2010 Survey drew attention to the relevance of lanhouses in the context of implementing universal access to broadband services in Brazil. Besides providing access to the Internet for an economically challenged portion of the population, lanhouses are able to offer a vast

range of important internet supported services (e-applications) for people who had no access to them until they came into existence. Establishing a legal framework to promote the formalization and professional management of lanhouses and enable them to create partnerships with public and private agent could, provide a sustainable way to invest in infrastructure for broadband Internet access, offer relevant services to their communities, and ultimately promote social and digital inclusion.

3.4 Democratic Republic of Congo

Strategies for the development of broadband services in the Democratic Republic of Congo

The base framework in the DRC is law No. 013/2002 of 16 October 2002 on telecommunications, which is liberalizing the sector and defines universal service as "the right of every Congolese living in rural, urban or isolated areas to benefit of services of voice telephony, telex, public payphones, at a reasonable cost". The revision ICT bill takes into account the harmonized bill for the Economic Community of Central African States (ECCAS) proposed by the project "Harmonization of ICT Policies in Sub-Sahara Africa" (HIPSSA) The definition and the content of universal service have taken here a new dimension by incorporating the concept "access to broadband services." Universal service is defined as a minimum set of services with a defined quality that is accessible to the general population at affordable rates, without interruption, regardless of the geographic location. The levy rate for the Universal Service Fund remains unchanged i.e. 2 per cent of the turnover of the operators of the sector.

Government project:

Pending the release of the Universal Service Fund, which is paid by the operators but is used by the treasury for other purposes, the Ministry in charge of ICT and the Regulatory Authority of postal and telecommunication of Congo ARPTC use among other things Public Private Partnership, other donors, international agencies and others who may contribute indirectly. Substantial support is also provided by the World Bank to ARPTC to study the feasibility of community telecentres.

- Computerization and digitization of schools in Kinshasa
- Computerization of public services of the State

National strategy to implement universal access to broadband services in the DRC

- Infrastructural development in fiber optic broadband (establishment of a National Backbone) capable of meeting the long-term needs of public and private market of telecommunications and information technology and communication by providing access points in all provinces;
- Establishment of a new institutional framework of ICT;
- A study on the digitization of the Congolese economy.

Level of achievement of broadband infrastructure projects in the DRC:

Two projects have been completed:

- Project Network of F.O of IOCPT
- Metropolitan project (MAN / KINSHASA)

Conclusion:

The political will to implement access to broadband to benefit the population will be manifest throughout the national territory with the advent of the fiber optic network, which is being implemented, with projects of access at low cost for rural and remote areas, with development of content and applications related to socio-economic realities.

3.5 Venezuela

Broadband services and wired access networks

CANTV, the Venezuelan State's telecommunication operator, basing itself on the principle that access to telecommunications is a fundamental human right, is focused on guaranteeing telecommunication services throughout the national territory by means of initiatives designed to broaden geographic coverage and include all segments of the population, thereby facilitating the use of telecommunications and reducing the digital divide, its understanding being that the purpose of universal access is to provide all users with access to a basic package of telecommunication services, including broadband services.

Against a background of on-going technological progress and growing demand for services, we consider it important to analyse the practices adopted by other operators to guarantee broadband delivery while pursuing the evolution of access networks.

CANTV's general strategy for fixed network evolution

- Evolution towards a high-speed, IP-convergent universal transport network.
- Evolution towards an NGN-convergent platform.
- Expanding the coverage of the networks to provide voice, video and broadband services.
- Inclusion of currently unserved or underserved areas.
- 100 per cent availability of Internet on NGN nodes.
- Evolution towards a higher-capacity access network through the intensive use of optical fibre.
- Implementing a scalable VoIP architecture.
- On-going development of video services through the company's different access media.
- Consolidation of a national transport network through the implementation of the Eighth Universal Service Project (Opsut), which will add a further 3 646 kilometres of optical fibre.
- International transport network and interconnection of the state network, through which CANTV will incorporate into its network 5 796 kilometres of optical fibre from other state entities.

3.6 Finland

High-speed broadband for all in Finland

Background for the Finnish broadband initiatives:

The Government made a resolution in December 2008 on the new national broadband strategy. The strategy contains 2 objectives to safeguard broadband for all:

- Amendment to the legislation concerning Universal Service to include basic broadband subscription in 2010 ("1 Mbit/s for all")
- State aid for the most remote 5 per cent of the population and to boost trunk network investments for providing high-speed broadband connections by the end of 2015 ("100 Mbit/s for all") At the end of the year 2010 almost 3,2 million subscriptions :
 - (i) 50 per cent of all broadband connections were mobile broadband connections and
 - (ii) 76 per cent of fixed broadband subscribers use broadband speed above 2 Mbps.

For rural areas high speed projects, Ficora, the Finnish Regulatory Authority, organizes tenders and makes selected operator invest on network project and then pays the project cost by state aids.

This legislation entered into force in January 2010 and covered extended universal service, i.e. from basic universal service of 1 Mb/s in 2010 to high speed broadband of 100 Mbits/s in 2015.

Universal service: broadband

Ficora The Finnish Communications Regulatory Authority (Ficora) designated 26 broadband Universal Service (US) providers at the end of 2009. Ficora has also published a brochure with FAQ and other information on 1 Mbit/s universal service. According to US operators, the demand has been modest.

Universal service: other activities

- Ficora's US decision concerning telephone services was updated in 2010;
- New provisions were included for disabled users to be implemented in 2011.

Rural high-speed broadband projects: process

The process of granting state aid in Finland is as follows:

- Regional councils decide which projects to start during a given year and inform Ficora;
- Ficora conducts a public hearing and market analysis of each of these areas;
- Regional councils will organise an invitation to apply for public aid and select the operator to build the network;
- The operator will apply for aid either to Ficora or EDTE-centers depending on the municipality;
- The Ficora/EDTE-center will grant the aid if the conditions are met;
- After the network project is completed, the operator will apply for payment;
- Payment is made according to actual costs incurred;
- There is a 10-year period of supervision during which the operator has to comply with specific obligations e.g. for network access.

High-speed broadband for everyone in Finland

- The Ficora led a public consultation and market analyses for approximately 300 broadband projects in 2010. Regional councils opened the tendering for the first set of projects in 2010
 - approximately 40/150 projects received at least one tender
 - the second set of projects has been opened in the current of 2010

The First state aid applications has been processed by Ficora and the first decision has been taken in 1.4.2011 (Miehikkälä broadband project)

3.7 Burkina Faso

Universal access to broadband services in Burkina Faso: from political will to reality

With the revision of the regulatory framework of telecommunications / ICT in 2008, universal service has taken on a new dimension. On the occasion of the revision of the regulatory framework, including the transposition of Community legislation (WAEMU directives adopted March 23, 2006 in Abidjan and additional acts of ECOWAS adopted January 19, 2007 in Ouagadougou), the definition of Universal Service now integrates access to broadband services.

The government, with the Ministry responsible for telecommunications in the lead, is working since 2006 to effectively implement universal service in a short time. The Universal Service Fund contains contributions from telecommunications operators for over a decade, to provide funding for important projects between 2006 and 2010. In addition, as explained below, the Burkinabe government plans to build a fiber optic backbone across the country.

The universal service funding:

A 2 per cent levy of the turnover of operators holding licenses was established to supply the fund, and an inter-ministerial committee was established to monitor its implementation, chaired by a representative of the Ministry of Posts and ICT.

Implementation of universal service:

Besides the now classic concept of universal service, the government has initiated a project to build a fiber optic national network (backbone) throughout the country. This backbone is planned to connect, in its first phase, all 45 capitals of provinces and a second phase in all the 350 administrative centers and municipalities. The feasibility study of this project was completed in December 2010 and the financial study for the mobilization of the necessary funding began immediately after. The report of the feasibility study was submitted to the government and the outcome of the review will guide the rest of the project. However, the realization of the project had some difficulties because of the opening the market for competition, which has to be reviewed in a public-private partnership.

This project is part of a major thrust of the government's strategy in the telecommunications/ICT sector contained in the plan of sector policy 2006-2010 that wants to deploy throughout the country the broadband infrastructure.

Conclusion:

Ultimately, the effective implementation of universal service in accordance with the current regulations will be an initial implementation, at national level, of the universal access to broadband services. With funding available for more than ten (10) billion CFA francs, unfortunately this implementation is suspended until the final regulatory and institutional settings are in place. Given the political will, universal service will cease in a short time to be utopian.

The proposed national fiber optic backbone will provide sustainable and reliable infrastructure, an important factor for its success in the information society. The inclusion of the proposed national fiber optic backbone project in the policy documents of Burkina Faso (Accelerated Growth Strategy for Sustainable Development (SCADD), Presidential Program) denotes the government's determination to provide the country with such an infrastructure in the near future.

3.8 People's Republic of China

Research on China's universal access to broadband services

In recent years, with further enhancement of communication capabilities of telecommunication network, China's internet access has achieved rapid development.

By the end of 2012, China's internet broadband access ports reached 268 million, and had increased 3.6 million in one year. Internet bandwidth of the backbone network approached 1900 Gbps, up 36 per cent from a year earlier. In addition, the broadband network covered 19 thousand more administrative villages in 2012. The coverage of administrative villages has risen to 88 percent. At the same time, the fixed broadband coverage of cities and towns reached 100 percent. The total number of mobile 3G base stations came up to 1.04 million and 3G wireless networks covered all cities, and nearly 88 percent of villages and towns.

In terms of broadband network performance, the access rates were greatly improved. By the end of 2012, the fixed broadband users with more than 4Mbps in bandwidth have reached 114.9 million, which covered 66 percent of all broadband users, up 23 percent from a year earlier. The subscribers with more than 8Mbps in bandwidth have increased by 13.5 million to 28 million, which is 16 percent of all fixed broadband users. Fiber to the home covered 94 million families, some of which have enjoyed more than 20 Mbps internet access speed.

Compared with developed countries, there are still significant gaps in broadband access speed and penetration rate. By the end of 2011, the broadband penetration in 34 OECD developed countries was 25.6 per cent, but the broadband penetration in China was 13 per cent at the end of 2012. The main fixed broadband access rate of China was 4Mbps, which was much lower than the developed countries. What is more, the lack of broadband is increasingly becoming an obstacle to development in remote areas in central and western China and in rural areas generally. Therefore, finding a solution for universal access to broadband services in China is necessary to prevent the “broadband gap”.

The basic features and trends of China's broadband users:

Fixed broadband users increased by 25 million to 175 million at the end of 2012. The penetration rate of broadband subscribers has reached 13 percent. As for mobile broadband, the number of domestic 3G subscribers exceeded 233 million at the end of 2012, which mean an increase of 100 million in one year. Within new mobile phone users, the proportion of 3G users has risen from 72.5 percent in 2011 to 83 percent. The penetration rate of 3G subscribers has reached over 17 percent, up 7.8 percent from a year earlier. Although the level of Chinese broadband development has reached a new high, the broadband gap between urban and rural areas still exists. Chinese rural broadband users have reached 40.7 million at the end of 2012, which was only 23.3 percent of all broadband users. Broadband development in rural areas has fallen behind that in cities, and the gap is likely to expand further.

Broadband Service: Regional Differences

The government needs to consider the relatively large regional differences in formulating policies to narrow the “broadband gap”. The Government has a long way to go to reduce the “broadband gap”.

Barriers impacting universal access to broadband services:

There are three main constraints: (1) availability of broadband services, (2) affordability, and (3) choice barriers in central and western China, especially in rural areas.

- The construction investment required for broadband infrastructure and the cultural level of the population are the main constraints to the availability of broadband services.
- Affordability of broadband services is mainly impacted by the tariff, which is relatively high. The problem of broadband affordability is particularly prominent in the Midwest, especially in rural areas. At the same time, the relatively high cost of a one-time purchase of computers restricts affordability of broadband services in rural communities.
- Low competition in the field of broadband is becoming the main barrier to choice. In rural and other underdeveloped areas, resources are mainly concentrated in the hands of operators, so the relatively high broadband tariff has inhibited the development of universal access to broadband services.

Policies and measures that can be considered for promoting universal access to broadband:

In order to promote the development of broadband, the Chinese government has adopted a series of measures including:

- Strengthening the national guide strategy,
- Increasing financial and tax policy support to promote broadband network infrastructure sharing,
- Establishing the broadband operation of the network quality monitoring system,
- Optimizing the structure of the internet gateway,
- Establishing a long-term mechanism for internetwork expansion,
- Improving interoperability settlement methods, and
- Unifying the CPN construction standard.

[To break the barriers impacting universal access to broadband services, some policies and measures that can be considered:

- 1) Break constraints in broadband infrastructure investment by increasing subsidies and mobilizing private capital.
- 2) Break cultural constraints by setting up a Township Information Training Center responsible for information technology education and training.
- 3) Provide direct subsidies to rural residents in order to assist with high broadband tariffs.
- 4) Break barriers inhibiting broadband choice by establishing an effective mechanism of market competition. In addition to open market access, support regulatory measures.]

3.9 Republic of Korea

Enhanced broadband building authentication program

The government authenticates and notarizes buildings equipped with intra communications facilities above certain standards in order to support efficient broadband services. The “Authentication program” in this respect means that the government officially acknowledges that these buildings have well-established intra-communications facilities in preparation for future broadband telecommunications environments.

The Korean Government revised and expanded the Broadband Authentication Program from internet equipment to also include digital broadcasting reception systems. By this action, KCC seeks to ensure successful transformation to digital broadcasting and support 3DTV, smart TV, and ultra-broadband convergence network (uBCN¹).

This revised guideline specifies the criteria for broadcasting equipment establishment, location, and reception quality; the ‘special grade’ for apartment houses is given only to those that passed a digital broadcasting examination.

Main revisions to the program:

- 1) Qualify as “broadband building” when 20 or more apartments with “special class” meet digital broadcasting authentication criteria.
- 2) Require the Korea Broadcasting System to monitor DTV reception quality of integrated reception antenna system and, if necessary, take measures to improve the reception quality of terrestrial DTV.
- 3) Mark excellent DTV reception guarantee certificate and its certificate agency on broadband buildings with 'special class'.
- 4) Renew the certificate among existing 'broadband buildings with special grade' when additional DTV reception equipment is established for better DTV reception quality and certificate.

Effect:

The Korean Government expects that the revised Broadband Building Authentication Program will prevent confusion and groundless fear of users about digital broadcasting reception, enhance the credibility of successful digital broadcasting transformation, and lay a foundation for providing excellent 3D TV and Smart TV service and an ultra-broadband convergence network (uBCN).

Korea’s best practice for financing ICT development is its “Informatization Promotion Fund”.

The Informatization Promotion Fund has brought significant development of ICT infrastructure in Korea. It provided the necessary funds to establish and improve broadband network construction, an e-Government base, and ICT industry promotion in an efficient and balanced manner. Based on their past

experience, Korea believes that a dedicated funding source for ICT development is an essential part of any ICT development plan.

3.10 Argentina

Argentina Connected

In 2010, Argentina launched a strategic plan to promote the development of telecommunication infrastructure throughout its national territory including access to the Internet. Decree No. 1552/2010 created the National Telecommunication Plan “Argentina Connected”, which seeks to reduce the cost of broadband services for Internet, television and video, increase coverage and achieve optimum service quality levels, reaching all the country’s inhabitants on an equal footing.

This five-year plan is the result of exhaustive analysis of the components that make up the country’s ICT ecosystem, identifying gaps in the development of the sector with a view to determining the actions needed to close them.

The infrastructure and equipment targets and timelines can be summarized as follows:

This integrated connectivity strategy comprises seven strategic directions for action, linked to public investment in the deployment of infrastructure, equipment and services:

- a) Digital inclusion;
- b) Optimizing use of the radio-frequency spectrum;
- c) Universal service;
- d) National production and employment creation in the telecommunication sector;
- e) Training and research on communication technologies.
- f) Infrastructure and connectivity
- g) Promotion of competition

The national telecommunication plan *Argentina Conectada*

Deployment of the federal fibre-optic network is a key element of the national telecommunication plan *Argentina Conectada* (“Argentina Connected”), the connectivity strategy drawn up by the Government.

This network has a number of objectives. One is to promote a qualitative leap in the coverage of the data transmission backbone by reaching in the first phase more than 1 700 localities throughout the country through invitations to tender for individual sections. Bringing the fibre-optic network into service is intended to ensure coverage of 97 per cent of the population by 2015. The remaining 3 per cent will be covered by satellite services.

3.11 Uganda

Internet penetration, access and usage in Uganda are still very low and are estimated in 2010 at 5 per cent users of the total population. This is also largely confined to urban commercial centres owing to commercial considerations by the private service providers. Although Uganda’s previous policy had supported the installation of Internet points of presence in all the underserved districts, the internet bandwidth speeds and quality of service issues (outages) has been of major concern by the end users. Therefore the new policy objective established in 2010 has the aim to improve broadband uptake in selected underserved areas as a pilot case which shall offer experiences for developing a national broadband policy and strategies for its implementation.

3.12 Burundi

Burundi has adopted in July 2011 the National Policy for ICT Development (PNDTIC) for the period 2010-2025. The innovation in this policy is the presence of a strategic concentration on rural connectivity and universal access, specifically: To support the decentralization and equitable access to services;

- To ensure adequate coverage of rural areas;
- To stimulate the creation of wealth and create autonomous communities;
- To increasing employment in rural areas;
- To increase the penetration of media.

3.13 ITU/BDT

Overview of the ITU project on wireless broadband master plans in the Asia-Pacific region

The ITU Project on “Wireless Broadband Master Plans in the Asia-Pacific Region” aims to assist countries in the Asia-Pacific region in developing their own wireless broadband master plans. The project is funded by ITU and KCC (Korea Communication Commission), Republic of Korea. ITU developed Generic Guidelines for the preparation of national wireless Broadband Masterplans for the Asia-Pacific region and in particular assisted Nepal, Samoa, Myanmar and Vietnam by developing individual Wireless Broadband Master Plans for each country. Under the project, ITU assisted Bhutan, Bangladesh, Cambodia, Indonesia, Pakistan and PNG to develop National Broadband Policies/Plans. This project also focussed on building human capacity. More than 400 persons were trained through national workshops (11 workshops). ITU also assisted Fiji in development of their National Broadband Policy

Project Scope:

- 1) Survey the broadband situation
- 2) Develop a master plan for pilot countries
- 3) Train national experts to develop a wireless broadband master plan?

Project outcomes:

Survey results:

- Collect information on the status of broadband in the Asia-Pacific Region.

Wireless Broadband Master Plan:

- For selected four countries prepare Wireless Broadband Master Plans
- National Broadband Strategies and Policies
- National Training + Regional Workshop:

4 Coordination among policy-makers, regulators, operators and other stakeholders in the development of universal service for broadband – Review of countries’ experiences

4.1 Brazil

The broadband access program for Brazilian public schools in urban areas: When initially created, most universal service policies focused exclusively on providing affordable “fixed line” telephone service to all citizens, regardless of their geographical location. Such models are now largely outdated because of the rapid emergence of broadband Internet connections and mobile technology. To keep pace with the need

for access to modern technology, many countries have already or are considering expanding their universal service fund (USF) distributions to include ICT-related services. Initially, the funds may be applied to support interim measures such as development of community centers, Internet kiosks, and other community access points.

Eventually, universal service funds can be used to support ICT/broadband programs that give underserved businesses and individuals' access to PCs and other ICT equipment, broadband Internet access, and content and services that deliver substantial social and economic benefits (see previous section). One of the important factors for Universal Service Fund projects gaining notoriety is the concept of sustainable projects or programs. The idea is to encourage the development of projects that will one day become self-sustaining from revenues generated by the services provided

The Brazilian Government, Anatel, the Ministry of Communication, the Ministry of Education and telecommunication companies are united to reach the goal of providing broadband Internet access to all public schools in urban areas. There are two important factors that must be highlighted. First, the goal is nationwide, with no specific goal for each Brazilian state. Second, the number of schools that meet the project's criteria has actually increased.

The Brazilian Administration is conducting three different programs that focus on universal access. One is the Broadband Access Program for Brazilian Public Schools in Urban Areas. The Program targets all public schools of primary and middle education in urban areas.

The main goal of this Project was to deploy, by 31 December 2010, broadband access in all public schools in urban areas for students starting at age 6 (six) and in teacher training institutes. The minimum Internet bandwidth to be deployed is 2Mbps after 31 December 2010. During the course of the project, which is to last until 31 December 2025, the minimum bandwidth must be revised periodically to the maximum band commercially available at the schools vicinities. This means that if any residence or office near a school is getting, for example, 10Mbps, that school must also receive 10Mbps, at minimum. According to Anatel, 57,586 schools were connected.

4.2 Democratic Republic of Congo

Implementation of universal access to broadband services:

In 2011, the situation, marked by the collection of the levy for the universal service without implementing the related projects, was problematic for the government. To remedy this situation, some sectoral projects have been implemented through a public-private partnership.

The Congolese Government, the Ministry of Education, the Ministry of Health and the telecommunication companies are united to reach the goal of providing broadband Internet access to all public schools and universities, hospitals and community telecentres in urban areas.

Programs to promote broadband access in schools, universities, hospitals and community telecentres in DRC:

- Program Connect universities and research centers in DRC
- Project on eb @
- Project UniversiTIC Congo
- Project "Ebale-Health" (2009)

4.3 Turkey

The Ministries of Communication and Education are collaborating to provide notebooks/tablets, interactive classroom LCD touch boards and broadband for all pre/primary/high school classrooms (620,000) in Turkey. Relevant content is to be finalized in 5 years as each year a segment of schools

receive donated ICT equipment. Regarding human capacity building, equally and all over the country, students will have access to ICTs at a young age.

Independently, telecom group Turk Telekom has started a fibre-optic initiative that will bring to all cities and town of country very high-speed broadband in 3 years.

5 Means of financing universal access for broadband services

5.1 Optimal and effective allocation of funds for universal access to broadband services

As the world becomes more dependent on information and communication technology (ICT), broadband Internet access and usage is increasingly recognized as essential to economic growth and the provision of education, healthcare, and other basic services. Despite this growing acceptance, emerging countries continue to struggle to find affordable and sustainable ways to provide widespread access to digital devices and broadband connections, especially in rural and remote areas.

In fact, as the broadband revolution unfolds, large segments of the world's population are being left behind. Over five billion people have never experienced the Internet or have only experienced it through public or shared access, and this excluding the use of Internet through broadband access. Indeed, there is a wide disparity in broadband access around the world, both within countries and between countries. In this context, the concept of universal service and access remains relevant, although it is now necessary to re-assess the concept.

Over the past two decades, the scope of universal service and universal access (UAS) has widened. Today, UAS is increasingly being re-conceptualized to include Internet – and even broadband – and to address issues around digital inclusion. Moreover, stimulating demand for services, particularly broadband-related services, has become a priority. Funding that was previously focused on supply-side interventions – networks and facilities – is now increasingly being channeled to interventions that will stimulate demand.

Notwithstanding these changes in the scope and objectives of UAS, the concept and practice remain firmly rooted in the market liberalization context, and despite the changes in the environment, this rationale is fairly consistent. Moreover, policy and regulatory considerations in designing universal service and access projects, and the fundamentals of universal service and access have not changed.

There are many approaches to public universal access financing. In most cases, the appropriate structure and set of partners depend on the type of project and its objectives. No single funding model is appropriate for all universal access projects or for all countries. Nevertheless, there is a specific universal service and an access framework [checklist](#) that can help to facilitate selection of an appropriate funding model.

Since the 1980s, there has been a shift away from public provision and funding of ICT infrastructure to a model centred on private sector participation. Since then, the general consensus favoring private financing for network deployment and service rollout has not changed. However, in light of the greater financing requirements of Next Generation Networks and the constrictions on capital liquidity following the 2009 global financial crisis, there is an increasing return to public funding. Three models continue to stand out: equity investment, public-private partnerships (“PPPs”) and financial incentives. The mix of approaches and where they are best applied has changed however, in light of experience over the last years with PPPs and USAFs (Universal Service Access Funds) as financing mechanisms. The selection of a funding model is best made on a case-by-case basis with reference to criteria such as economic efficiency, equity, competitive neutrality, technological neutrality, certainty, transparency, and cost effectiveness. Consequently, the number of USFs has more than doubled over the last decade. Initially created to ensure ubiquitous deployment of basic telephone equipment and services, today, the funds are used to support ICT/broadband programs.

These programs may include:

- Digital devices – including PCs, tablets, androids and other ICT equipment, etc.;
- Broadband Internet access – with speeds up to 10 Mbps;
- Local content and services – software/applications in local languages that make education, financial services, healthcare, e-government, and other services more accessible.

5.2 Review of countries' experiences

Examples from every region of the world—including India, Malaysia, Mongolia, Morocco, Pakistan, Turkey—show how universal service funds can provide an ideal mechanism for governments in emerging countries to help subsidize and support ICT/broadband programs that target underserved populations.

The summary table below provides an overview of the regional distribution of the 69 funds studied in a report submitted to the GSR13¹¹ and illustrates some of the characteristics of the funds on a regional basis. The table is followed by two figures that provide a pictorial view of the information contained in the table. The parameters used to classify funds as having low active, moderate activity or high activity are as follows:

- high activity – more than 15 applications of the USF in progress or completed
- moderate activity – 6 to 15 applications of the USF in progress or completed
- low activity – less than 5 applications of the USF in progress or completed

In the case of the use of the term 'inactive'¹², this can mean:

- That the fund has been created through legislation and responsibilities defined, but its structure and processes are not yet in place.
- That the fund has been created through legislation and responsibilities defined, but the fund structure and processes are not yet in place although USF levies are being collected.

That the fund was active/ functioning at some point in time, but activity has ceased or has been suspended.

Table 1: Regional distribution of the 69 funds studied in a report submitted to the GSR13

Region	Africa	Arab States	Asia Pacific	Europe and CIS	The Americas	TOTAL
Total Number of Funds Studied	22	7	16	8	16	69
Funds that Permit Broadband	4	4	9	2	8	27
Number of Funds with High Activity	4	2	8	3	9	26
Number of Funds with Moderate Activity	6	2	2	1	1	12

¹¹ Report on Universal Service Fund and Digital inclusion submitted to GSR-13, Warsaw, Poland

¹² The term 'inactive' **excludes** the countries in which the law addresses USFs but where the provision has not been enacted.

Region	Africa	Arab States	Asia Pacific	Europe and CIS	The Americas	TOTAL
Number of Funds with Low Activity	5	0	1	4	3	13
Number of Inactive Funds	7	3	5	0	3	18
Funds that Include Telecenters or Community ICT Centres	10	3	5	2	7	27
Funds with Inclusion for Persons with Disabilities	9	1	5	5	4	24
Connectivity of Anchor Institutions* 11	8	2	6	1	8	24
Funds with Special Inclusion for Women	1	0	3	0	0	4
Consistent published financial reporting	2	1	4	2	8	17

* Although a provision exists in the policy/framework, this does not necessarily mean that projects are in the planning stage or in place.

Figure 8 and **Figure 9** illustrate the current status of the 69 USFs studied as presented in the preceding table.

Figure 8: Current status of the Universal Service Funds studied (in percentage of total)

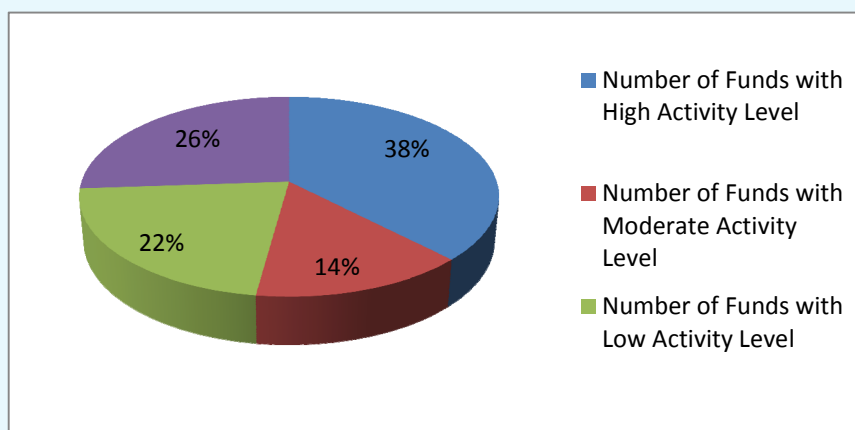
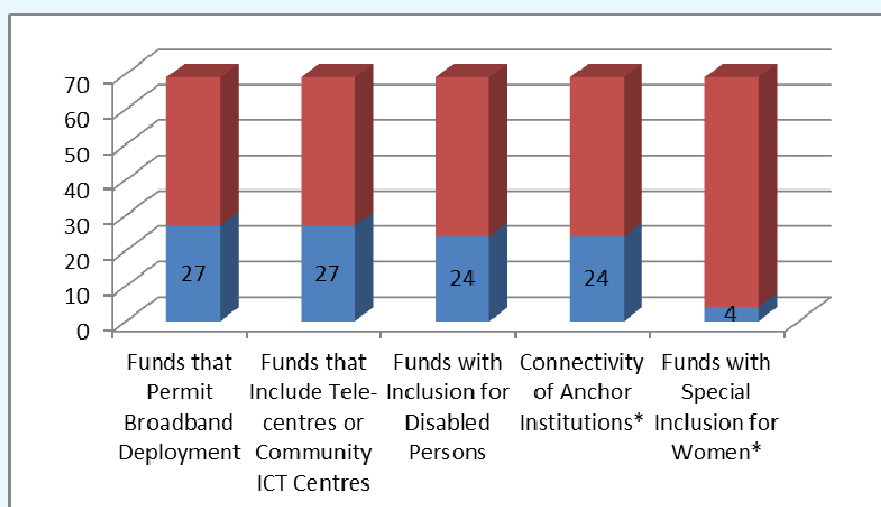


Figure 9: Information about the 69 Universal Service Funds studied

In addition to the fund characteristics listed above, 25 per cent of the funds studied provide some regular financial reporting¹³

5.3 Country case studies

5.3.1 India

More than 10,000 Internet kiosks have been established.

Program example: Public investment in building Broadband network through USF

At present OFC (Optical Fibre Cable) connectivity is available in all State Capitals, Districts, HQs and up to the Block Level. There is a plan to connect all the 2,50,000 Gram panchayats (smallest administrative unit of local government) in the country. This will be done by utilizing existing fibres of Public Sector Units (BSNL, Railtel and Power Grid) and laying incremental fibre to connect to Gram Panchayats wherever necessary. Dark fibre network thus created will be lit by appropriate technology thus creating sufficient bandwidth at the Gram Panchayats. This will be called the National Optical Fibre Network (NOFN). Thus connectivity gap between Gram Panchayats and Blocks will be filled. The NOFN project is estimated to cost about USD 4 billion. The project will be funded by the Universal Service Fund. The work is under progress.

¹³ Financial reporting refers to an annual (or other consistent reporting period) statement of accounts that indicates total levies collected, total funds disbursed and total funds remaining in the Fund account.

Results expected:

- Non-discriminatory access to the NOFN will be provided to all the Service Providers. These service providers like Telecom Service Providers (TSPs), ISPs, Cable TV operators and Content providers can launch various services in rural areas.
- Various categories of applications like e-health, e-education and e-governance etc. can be provided by these operators.

5.3.2 Malaysia

When Malaysia's universal service policy was established in 1998, the goal was to provide telephony services to underserved areas. The policy has since been updated to prioritize providing access to cellular and broadband Internet services.

The nation's universal fund is financed by operators that contribute 6 percent of their total weighted net revenue when revenue exceeds a stated amount. The fund is unique in that it can be used to pay for construction of ICT-related infrastructure, services, and devices.

Program example: 1 Million PCs with broadband internet access

Malaysia is using its USF to provide 1 million PCs and a year of free broadband Internet access to underserved communities around the country. For thousands of citizens in remote areas, the program offers their first introduction to modern technology and all of the social and economic benefits it offers.

Results:

- Initial 127,000 PCs have been distributed.
- Second phase is now underway, with more than 300,000 units to be distributed.
- A local ecosystem of suppliers, system integrators, and telco service providers has been developed.
- Program has helped to raise household broadband penetration rate from 20 per cent in 2008 to over 53 per cent in 2011.

Program example: Sustainable community centers

For nearly a decade, Malaysia has used its USF to build and operate community broadband centers in rural and remote areas. During the first three years, the USF pays for the construction and operation of the centers, while the centers use that time to develop their own sustainable funding methods.

Results:

- Hundreds of community broadband centers with broadband Internet access have been built and training provided to serve remote and rural regions.
- Many of the centers also extend connectivity to nearby locations through Wi-Fi networks.
- The community centers have developed a variety of sustainable funding methods, including requiring payment for services (ICT training, printing, copying, faxing, etc.) and selling ICT-related devices such as PCs and USB thumb drives.

5.3.3 Mongolia

Role of Universal Service Obligation Fund (USOF) for broadband

The Government of Mongolia introduced the Universal Service Obligation Fund (USOF) in 2006. Following this, 2 per cent levy of total revenues from all providers of ICT and collected funds were used to provide ICT services to remote and rural areas of Mongolia. Very few of the country's rural centres have internet services today. Only a minority of centres can be considered ready to support Internet services supplied by a commercial Internet Service Provider, especially if they have a low population, less than 24 hour

commercial electricity supply, and/or little prior experience of private fixed or mobile voice communication services.

The National Broadband Program of Mongolia has 5 main objectives; one is to create and establish broadband infrastructure and services in unserved rural and remote areas. The Universal Service and Universal Access Policy was the key enabler to reaching this objective. The USOF facilitated extension of a backbone fiber optic network to rural and remote areas of Mongolia, thus allowing access to information and communications technologies and service by the rural population. Carriers are likely to provide broadband services in rural areas if access to the national backbone network is supported by USF

In November 2010, Intelcon completed a project to provide Mongolia's Communications Regulatory Commission (CRC) with transaction support at every stage of the implementation of Mongolia's Universal Access strategy. The goal was to accelerate the development of rural telecommunications infrastructure and services in locations that were deemed unlikely to attract sufficient private investment. In particular, under the project, existing service providers were awarded least-cost subsidies to provide telecommunications access at the house level; and voice and internet access at the centres levels. Strategic vanguard institutions such as schools were also provided with private Internet access in 34 localities. The whole program comprised a series of competitive awards of one-time subsidies totalling USD 4.86 million through an output-based aid (OBA) tender process to operators, who then became responsible for installing, operating, and maintaining the new telecommunications systems on a commercial basis.

As a further step towards the implementation of Mongolia's Universal Access Program, the Government of Mongolia entered into a Grant Agreement with the International Development Association ("IDA"), a member of The World Bank Group. The IDA, under the Information & Communications Infrastructure Development Project (ICIDP), among other things, provided funds for subsidies to provide Soum Center Internet Services in Mongolia. This project is aimed at rolling out private and public access Internet Services, as well Internet access to major schools in 27 and 7 associated centers. In addition, the Government of Mongolia continued the project during 2010-2011, financed by the USOF, covering 22 centres.

5.3.4 Morocco

In 2004, Morocco's original universal service policy was redefined to focus on telecommunications services in addition to telephone services. Funding for the program comes from telecommunications operators that provide 2 per cent of their turnover before tax. Morocco's universal service funds have largely focused on the educational system, where students and teachers now have digital devices with localized content, as well as broadband Internet access and ICT training. The funds have also been used to equip multimedia centers at schools around the country.

Program example: Bringing digital devices and broadband to teachers

Nearly half the teachers in Morocco now have access to laptops and broadband Internet access thanks to the NAFID@ Program. The program also provides localized computer content and training to help teachers integrate ICT in their classrooms. Funded by the country's USF, the program seeks to enhance teachers' ICT-related skills, leading to improvement in the quality of learning for students.

Results:

- More than 150,000 teachers have subscribed to a subsidized broadband Internet connection.
- Teachers have purchased 50,000 laptop computers at a subsidized price, with localized, built-in content.

Program example: Helping students get connected

Since late 2009, the INJAZ program (Arabic for "Achievement") has provided substantial subsidies to lower the cost of digital devices and the first year of broadband Internet access for engineering and science

students. By making ICT more affordable for students studying engineering and science, the program helps to develop a future workforce of entrepreneurs and technology leaders.

Results:

- More than 40,000 science and engineering students now have their own laptops and broadband Internet connections.
- Goal is to provide a laptop for every student—80,000 in all.
- Plans are being developed to expand the program to cover university students in other disciplines.

5.3.5 Pakistan

Pakistan's universal service company was created in 2007 to "connect the unconnected" across Pakistan. The country's policy boldly declares that each of the nation's 180 million citizens has a right not only to basic telecommunications services but also to e-services and broadband. The USF is primarily funded by telecom operators that contribute 1.5 per cent of adjusted revenues. There is no government funding. The goals for the USF are to increase the level of telecom penetration in rural areas, expand broadband penetration in unserved areas, and enhance e-services throughout the country.

Program example: Nationwide broadband

Since early 2009, Pakistan's USF has been used to extend broadband Internet access to small towns and cities across the country. Of the 450 towns and cities targeted, only 10 had broadband access when the program started. The next step will be to extend broadband coverage to villages through community telecenters.

Results:

- At the end of 2011, 238 towns and cities had broadband Internet access.
- Nearly 800 secondary schools, colleges, and libraries had digital devices and a year of free broadband access.
- Telecom operators were and are incentivized to attract more broadband customers in order to receive more universal service funds.

Program example: Extending fiber-optic connectivity

Pakistan's USF is being used to extend fiber-optic connectivity across the country. Building these "information highways" is a multi-year project that is creating jobs and laying the groundwork for nationwide broadband connectivity.

Results:

- Nearly 3,000 kilometers of fiber-optic cable have been laid so far.
- Goal is to lay about 8,800 kilometers of fiber-optic cables across the country.
- Connectivity will eventually extend to all 400 sub-districts in the country, including the 30 per cent that are rural and remote and were previously unserved.

5.3.6 Turkey

In June 2005, the government of Turkey instituted its USF, which is managed by the Ministry of Transport and Communications. Turkey's policy allows funds to be spent on digital devices as well as ICT equipment such as base stations and fiber lines. Creation of the USF quickly enabled Turkey to expand broadband services to every public school in the country and, through community Internet centers, to increase public access and usage of the Internet.

Program example: Education transformation

Through the Fatih program, Turkey aims to transform its education system to provide 1:1 eLearning. The program, which involves deploying ICT devices, broadband Internet access, and ICT training in classrooms across the country, is funded by the Ministry of Education and by the USF, which is contributing USD 8 billion to USD 9 billion over four years.

Results:

- Initial rollout is underway, which involves development of broadband networks and ICT infrastructure in schools across the country.
- Over the next three years, digital devices and broadband access will be provided to 620,000 classrooms, serving 15 million students.

Program example: Internet access centers

Since 2006, Turkey's USF has been used to fund development of public Internet access centers (PIACs), and to equip those PIACs with PCs and other digital devices. The centers provide many rural and remote communities with a much-needed introduction to computers and Internet access, as well as digital literacy training.

Results:

More than 4,500 PIACs are now in operation.

The PIACs include more than 75,000 digital devices.

Each PIAC offers digital devices, printers, and an Internet connection.

5.3.7 Senegal

Universal access/service in Senegal is defined as a minimum set of telecommunication and ICT services of good quality that is accessible to the entire population at affordable rates regardless of geographical location (Law 2011-01: Telecommunications Code). The purpose of universal service is thus to provide deprived populations, and essentially those living in isolated rural areas and underprivileged urban areas, with the means to become autonomous, access information and use telecommunications as a tool for social integration.

Thus, in order to ensure that all citizens have access to these telecommunication services, the State of Senegal carried out a study of the telecommunication sector and elaborate a strategy for universal telecommunication service. The objective is to make information and communication technologies a lever for social and economic integration and development. Based on the analysis made, recommendations were formulated, as indicated below.

2004 analysis:

Rural areas

- Overall, per capita GDP (\$244) is 25 per cent of the GDP in urban areas (\$980);
- Electrification levels are low: only 7 per cent of the 14 206 villages have electricity;
- Access to drinking water is limited: only 50 per cent of the villages have such access;
- Public access to telecommunication networks is limited:
 - Existence of a network and a public access point in 1 000 villages;
 - Existence of a network but with no public access point in 5 600 other villages. Thus, there is no network in over 50 per cent of villages.
 - Private access and value-added services are virtually non-existent: telephone density is less than 0.5 per cent, and there is practically no access to Internet.

Urban areas

- Network access is generally available in urban areas;
- Access points are well distributed;

However, private access to telecommunication services is limited in this segment due to financial constraints. Value-added services are also limited in this segment due to a shortage of access points and high prices.

Recommendations:

In order to narrow the digital divide, measures should be taken to remove disparities between rural and urban areas and promote economic and social development, to which end a three-pronged strategy employing different leverages has been proposed:

- Ensure the provision of telecommunication services in rural areas;
 - Direct negotiation with existing operators; update universal service obligations in their contract specifications;
 - Or launch calls for bids for development licences to select an operator for each geographical zone identified;
- Develop access to telecommunication services in urban areas;
- Establish a universal telecommunication service development fund to finance development projects in the telecommunication sector and access to telecommunication networks and services.

6 ITU-D capacity building activities in rural and/or underprivileged communities.

Importance of Capacity Building

Capacity building is a critical tool of sustainable development for National Programs. Allocating resources to rural and/or underprivileged communities is extremely important.

ITU/BDT Human Capacity Building (HCB) Division

BDT activities in the area of capacity building are a recognized source of high-quality training resources for different target audiences. The Human Capacity Building Division (HCB) of the ITU Telecommunication Development Bureau (BDT) works to strengthen the human, institutional and organizational capacity of developing countries in a manner that prepares them for the challenges of a digital economy. This mission is achieved through information and resource sharing on all major topic areas covered by ITU-D activities and delivery of ICT learning, training and development opportunities designed to build capacity across all social layers.

HCB Partnerships, ITU Centres of Excellence (CoE) and Internet Training Centres (ITC)

HCB activities are carried out through partnerships, and through the ITU Centres of Excellence and Internet Training Centres. The Centres serve as regional focal points for professional development, research, and knowledge sharing, as well as providing specialized training services. Under the umbrella of ITU Academy, the regional CoE networks are now being joined together into a single global network sharing training curricula, resources and expertise. The ITU Centres of Excellence network has a wide coverage in all regions of the world.

The ITU Internet Training Centres initiative works towards the creation and enhancement of ICT and related skills to contribute to the development of human capacity in developing countries. Through a train-the-trainer approach, the ITU works with public and private-sector partners and training institutions and universities to set up “internet training centres” which provide access to affordable and relevant

training programmes using both face-to-face and distance-based training methods. Through these centres, students access quality technical training curricula, provided by established partners, preparing them for industry certification enhancing their employability.

ITU Academy and its Portal

The ITU Academy, in cooperation with numerous public and private sector partners, delivers a wide range of online training opportunities in a number of thematic areas. Online courses address various audiences such as governments, policy makers and regulators, senior ICT executives and managers, as well as technical and operational staff from both state agencies and the industry. The ITU Academy was officially launched in October 2012 in Cape Town, Republic of South Africa, during the ITU's Global Forum on Human Capacity Building. ITU Academy activities are accessible through a portal to be found at: <http://academy.itu.int>. The portal allows for a single access point to ITU training interventions, whether delivered face-to-face, or through instructor-led or self-paced distance learning. ITU is working to build up high quality training resources and materials that are shared on the ITU Academy portal.

7 Development of local content, including services and applications – Review of countries' experiences

The availability of local content, including services and applications is important in the uptake of the broadband services. The level of development of these will depend on the status of education and digital literacy. These differ from country to country with developing countries being at the low spectrum. Contribution submitted by member countries indicated that some countries have embarked on incentives to improve not only the level of education and digital literacy but also delivery of government services to the public. This section shares the experiences on education programs and business models.

7.1 Broadband access for education and digital literacy

Migration from classical education systems to ICT based education systems will contribute towards the shaping of the future of children and countries. Deployment of a National Education Transformation Program will provide a beneficial Education Based Broadband Transformation which will also significantly increase broadband and ICT penetration in the short term and accelerate reaching all citizens. This can be demonstrated by the case studies discussed below:

7.2 Countries' experiences

7.2.1 Portugal Magellan project¹⁴

Portugal is making efforts to provide all students with laptops, connectivity, and free educational content as part of a larger initiative to help fuel economic development and transform society. The project has resulted in about a million and a half little 'Magellan' laptops being distributed to students. Over the past decade, Portugal has rolled out an ambitious, far-reaching set of related initiatives to:

- Invest in a comprehensive program for educational 'transformation' to help improve education through the widespread introduction of new technologies, low-cost laptops, broadband connectivity, educational content, and related training and support;

¹⁴ <http://blogs.worldbank.org/edutech/portugal>

- Create a local, sustainable economic model to fuel local job creation in local IT industries and expand international trade opportunities;
- Explore new sorts of public-private partnerships to help lower the costs of acquiring and sustaining new technologies across broad segments of Portuguese society.

7.2.2 Turkey Fatih Project

The Ministries of Communication and Education are collaborating to provide notebooks/tablets, interactive classroom LCD touch boards and broadband for all pre/primary/high school classrooms (620,000) in Turkey. Relevant content is to be finalized in 5 years as each year a segment of schools receive donated ICT equipment. Regarding human capacity building, equally and all over the country, students will have access to ICTs at a young age.

Independently, telecom group Turk Telekom has started a fibre-optic initiative that will bring to all cities and town of country very high-speed broadband in 3 years.

Another model for education transformation using ICT is from Turkey, which uses Universal Service Fund and government sources to support broadband connectivity of all schools and classrooms, and provide tablet PCs and educational content to all students and teachers. Turkey has initiated the FATIH Project to provide equal opportunities in education, and improve technology in all schools. .

The government established a Committee to execute the project from the following Ministries and government organizations; Ministries of Communication, Education, Development, Finance, Economy and Science-Industry-Technology, Under secretariat of Treasury, Prime Ministry's Investment Support Agency and Scientific & Technological Research Council.

7.2.3 Kenya E-Resource centres

In its endeavor to facilitate access to and use of communication and information services, the Communication Commission of Kenya supports the establishment of ICT centres in various parts of the country, through collaboration with other stakeholders and institutions that have direct interfaces with the beneficiaries. In September 2010, the Commission identified the Kenya National Library Service (KNLS) a state corporation established in 1965 by an Act of Parliament, Cap 225 of the Laws of Kenya to provide, establish, equip, manage and maintain libraries and to provide appropriate reading and information aterials in order to develop and promote a reading culture in country.

- Conducting annual reviews / Monitoring and Evaluation; and
- Jointly sharing best practices.

In addition to the above, the Commission and the KNLS shall define and mutually agree on sharing of project responsibilities and obligations including but not limited to preparation of project documents, definition of project scope, development of work plans and budgets, project financing, identification of collaborators, recruitment and training of project staff, project execution, procurement of services and dissemination.

7.3 Broadband access for business models

7.3.1 Spain Wireless Smart City (WSC) business model

The concept and reasoning behind the WSC is based on the understanding that social phenomenon known as a city generates huge flows of information from a wide range of heterogeneous sources. The way in which these flows are currently processed and managed means that they are not universally and effectively accessible to all of the social groupings belonging to or forming an active part of a city. This gives rise to inequalities whereby the information generated by each agent is available solely within that agent's milieu.

The reality is that a specific item of information may be of great value to other agents belonging to different heterogeneous groups, whence the need to manage and use all of this information in an efficient and intelligent manner. The word "intelligent" here refers to the way in which ICT service users manage their experience, to the mass of information that is available, whenever required, in the cloud component of the network, and to the creation of a sustainable business model based on its shared development with the various main agents, including the following:

- Trade and productive sector: Intelligent economy
- Mobility and logistics: Intelligent transport systems
- Environment: Intelligent environment
- Citizens: Intelligent individuals
- Health: Intelligent living
- Authorities: Intelligent government

With an adequate communications infrastructure, the information can flow between individuals, from individuals to machines and from machines to individuals, as well as between machines, thereby creating a new knowledge base founded on lifestyles and decision-making both automatic and citizen-based.

Intelligent cities are a means of developing more efficient cities offering better living standards in terms of administration, transport facilities, management and security systems and medical services. This list could be extended to cover practically each and every aspect of the city.

The main objectives when creating a WSC are as follows:

- To create a city that is connected by means of always-on wireless technology characterized by ubiquitous, mobile and transparent connectivity which enhances the connectivity between all stakeholders.
- To expand and develop new services of benefit to all of the city's stakeholders.
- To reduce the network development costs involved in the creation of a communications infrastructure (wireless technology being the best option in terms of cost and development-time savings).

- To achieve a significant reduction in the time taken to market products and services, with the savings that this implies for companies and entities.
- To place intelligence at the service of all stakeholders through the creation of intelligent companies, intelligent transport systems, intelligent infrastructures and intelligent authorities, thereby enhancing public satisfaction.

The main benefits derived from the development of a WSC based on its technology and business model are:

- A WSC contributes to the creation of a more innovative and efficient city through products and services which deliver added value to the citizen and to the city itself, this being reflected in lower costs for specific public services provided through our technology, generating savings that are more than considerable (by comparison with cities that do not have this technology).
- A hyper-connected city enables any citizen, in any location and at any time, to enjoy universal Internet access.
- Local authorities can provide more information to citizens and can benefit from e-administration. Connection of in-city sensors by means of deployed wireless cities.
- Public transport companies benefit by being able to monitor their fleets more effectively and provide added value to passengers, thereby gaining a significant competitive advantage.
- Local organizations and/or businesses can derive significant benefit from geo-localized advertising, enabling them to be more selective in terms of their target public.
- Operators can benefit from cost reductions.

8 Guidelines on the implementation of universal access to broadband services

8.1 Introductory notes

These guidelines are intended to guide ITU members States and in particular their National Regulatory Authorities on how to achieve the implementation of universal access to broadband services.

They focus on policies, financing, programs, legal and regulatory issues related to universal access to broadband services.

These guidelines provide:

- Guidance to countries, in particular developing countries, in order to adapt their national legislation and to introduce appropriate regulations taking into account the concept of universal service/access broadband.
- Guidance or indications that countries, in particular developing countries, should follow in order to develop national policies and strategies for implementation of universal access to broadband services.

These guidelines should be also implemented by taking into account the differences between the various regions of the world. Regional cooperation is recommended in order to reduce disparities in broadband development of the different countries;

These guidelines are presented under three parallel approaches:

- Broadband national strategies and policies
- Financing policies for broadband access and services
- Programs for broadband deployment and services applications

8.2 Broadband national strategies and policies

Broadband national strategy and policy

Develop national broadband policies and strategies taking into account:

- The definition of broadband universal service;
- The definition of broadband access; this should be considered in terms of minimum bandwidth;
- Various stakeholders should be involved in the telecommunication/ICT sector in order to reach a bilateral or multilateral cooperation to get to a good implementation of universal access to broadband services. Public/Private partnership is strongly recommended to drive infrastructure investments and to stimulate competition;
- Technological neutrality should always be taken into account in any envisaged solutions to face the problem of broadband access ;
- Fair competition should be assured for promoting broadband access for all;
- In terms of access to broadband services, focus national strategies on:
 - Programs of introduction of broadband in the various sectors of economic life: education, social, health, agriculture, commerce, etc.
 - Programs to develop applications and local content to ensure the wellbeing of the entire population;
 - Adequate training programs to allow greater ownership of projects related to universal broadband service. These programs should in particular encourage the training of young people and women in the field of ICT, and promote the adoption of measures to facilitate the creation and development of appropriate services at the local, commercial and social level on the Internet;
 - Study of standards of buildings and other structures to install the broadband infrastructures, and construction of buildings equipped with communications Intranet facilities eligible to foster the request for development of broadband services
 - Effective spectrum allocation of bandwidth.
 - All these programs must also take into account persons with disabilities;

Developing countries are invited to implement incentive policies that stimulate and increase the development of broadband networks and services:

Strategize to build National Optical networks to provide fibre connectivity up to the smallest administrative unit and offering backbone access to all service providers to provide services. Funding for this may be considered either through USF or PPP partnerships.

8.3 Financing policies for broadband access and services

Countries, in particular developing countries, are invited to implement incentive policies that stimulate and increase financial investments for the development of broadband access and services:

8.3.1 General financial measures

- Partnership cooperation between governments, national regulators, operators and other various stakeholders to make available and affordable universal service and to ensure better coordination in the implementation of broadband services to all layers of the population in their countries.
- Encourage cooperation in the establishment of networks and infrastructure as well as broadband services, to reduce costs and risks (especially for economically disadvantaged areas), through public-private sector partnerships
- Fiscal measures to attract domestic and foreign investors could be envisaged in a transparent legal framework.

8.3.2 USF financial measures

- Establishment of the USF Service Fund programs for broadband and ICT.
- Ensure consistent management of the Universal Service Fund

Developing countries are expected to:

- Implement operational and effective mechanisms to deploy broadband access and services using the Universal Service Fund as foreseen in the legal and regulatory frameworks;
- Define specific conditions for access to the fund for rural, remote and isolated areas;

8.4 Programs for broadband deployment for services and applications

ICT/broadband programs that are funded by universal service funds (8.4.1.) or by alternative mean (8.4.2) can and should be sustainable. For that to occur, sustainability must be a key area of focus throughout the planning process and integral to the eventual program design. The following are a few of the specific best practices to improve sustainability:

8.4.1 USF for ICT/broadband programs

In applying USF in support of ICT/broadband programs countries are invited to:

- Shift policies to enable and support ICT-related programs, including broadband;
- Develop an overall National Broadband Plan (NBP) that includes short-term and long-term indicators, goals, and measurements to track progress;
- Bring stakeholders together in a collaborative process that includes public and private partners with a range of interests and experience;
- Focus on and integrate in the NBP sustainability measures;
- Consider sufficient spectrum allocation for broadband and last-mile connectivity,
- Use the Universal Service Fund to promote public access points such as telecentres, connecting schools, universities, hospitals, etc.
- Ensure a strategically balanced combination of innovation, flexibility, autonomy and solid governance in order for a USF to be successful
- In order to 'future proof' USFs to the greatest practical extent, the underlying legal and regulatory frameworks must be structured so as to ensure that policies and parameters can be modified

quickly and effectively to accommodate the need for a new USF vision and respond to rapidly changing and evolving priorities.

- It is critical that USFs move as quickly as possible towards increased transparency and accountability so as to demonstrate the often unreported accomplishments that have been achieved.
- In situations where funds are struggling or where the existing framework is in need of modification or enhancement, initiating a public consultation process and making concrete use of the feedback that will be provided to effect change would be recommended.
- Ensure that in general, the critical need for a greater emphasis and attention to digital inclusion (in particular women, children and persons with special needs) is globally accepted and implemented.
- In cases where the collected levies for the USF have not yet been disbursed, prepare disbursement plans to make use of the funds as fairly and transparently as possible.
- In cases where the USF is currently constrained by the existing legal and regulatory framework, initiate the steps required to set the necessary changes in motion.

8.4.2 Alternative sustainable ICT/broadband programs

On broadband deployment, the countries should:

- Promote special package of broadband service (plain vanilla service) with access to in respect of Agriculture, Education, Health, Governance etc. which are important to build social capital, to offer the broadband service at a cost effective price (this may reasonably exclude cost component of international bandwidth)

Creating sustainable ICT/broadband programs

Sustainability is underpinned by targeted and comprehensive training and other educational programmes designed to ensure self-sufficiency in remote or underserved areas.

- 1) Consider models to further expand the scope and reach of the USF whether that be Public Private Partnership (PPP), supplementary direct government funding, contributions in kind (e.g., access to national, regional or local infrastructure, rights of way, etc.)
- 2) Develop program plans that cover no more than five to seven years. Markets and technology change too rapidly to plan for longer periods.
- 3) Design plans to fully recover the costs of delivering services over time.
- 4) Ensure that government subsidies are targeted, short-term, and investment-oriented.
- 5) Support service operations mainly through user revenues, with operations scaled to local needs and affordability.
- 6) Ensure that government contributions directly relate to public service goals.

Government agencies have been implementing a series of concrete actions to ensure successful deployment of broadband. Information communications infrastructure is needed to accelerate social and economic development. However, this requires large amounts of capital which can be challenging for developing countries.

- 1) Encourage cooperation among different stakeholders in building networks and infrastructures to reduce costs and risks (especially for economically unfeasible areas) – government-private, private-private, central-regional governments. Once a target area is chosen for broadband development (green or brown fields), select the lowest bidder for government subsidies on conditions of meeting public obligations

- 2) Encourage potential participants to form a consortium of operators if the project cannot be done by a single operator within the government's budget constraint.
- 3) Let regional governments (in partnerships with operators and using subsidies from the central government) develop the broadband fit for their regions on the condition that they meet the standard for interoperability, Quality of Service (QoS), etc.
- 4) Build more backbone and backhaul networks in the above noted ways of cooperation. Use and develop civil engineering infrastructure (ducts, poles, manholes, access to in-building wires, etc.) and permit sharing of these facilities for broadband development.

One of the most important steps is to create and provide content in a way that makes the residents the biggest beneficiaries. Content owned by various sectors of the government and private providers are collected, customized and created in local language. Content specific to a certain local area could also be made available for the local people in a customized form.

- 1) Increase e-applications for government organizations, and education and health agencies, and create necessary conditions for fast and reliable public service using broadband network.
 - 2) Run training courses and public awareness activities for e-applications, promoting results and outcomes to the public.
 - 3) Increase the application of e-governance at local government administration levels, and create a training system to improve ICT awareness and skills.
 - 4) Support access to education, disseminate ICT into the educational system, and promote its application from primary school through informatics, and information technology subjects to provide e-literacy at the national level and enhance computer education.
 - 5) Improve national content, localize international resources to the national situation and provide policy support for content business.
 - 6) Increase internal Internet-based data traffic and support internal cross-connections to create a favorable business environment.
- Developed nations have repeatedly noted that broadband networks drive economic growth and development, and provide a platform for addressing social issues such as health care and education. However, in developing nations, broadband infrastructure to connect schools, hospitals and communities is expensive.
 - 1) Similar to the "Connect a school, Connect a community" initiative of ITU, a "Low cost computer" program would be very helpful in developing countries for universal access and broadband development.
 - 2) Provision of low-price PCs to rural residents and the Government alike. Rural residents could be provided with the possibility to purchase a high efficiency PC at a low price (guaranteed by the Government) as part of the Government services provided to its citizens.
 - Include broadband internet in the universal service and universal access definition and program. Introduce/develop a next generation satellite broadband network for remote/nomadic areas based on the extended USF. Universal Access Policy is the key enabler of the broadband implementation.
 - Study and identify technological alternatives for wired access network deployments which, together with other initiatives designed to strengthen transport layers, ensure the delivery of pre-identified services in a manner that is operationally efficient, socially profitable and cost effective.
 - Shift policies to enable and support ICT-related programs, including broadband
 - Develop an overall plan that includes short-term and long-term indicators, goals, and measurements to track progress

- Bring stakeholders together in a collaborative process that includes public and private partners with a range of interests and experience
- Focus on and integrate sustainability measures from the beginning
- Consider sufficient spectrum allocation for broadband and last-mile connectivity

ANNEXES

Annex 1: Relevant working documents

Annex 2: Definition of Question 7-3/1

Annex I — Relevant working documents

The following documents were submitted for the study of the Question and used to draft the final report.

Study Group Contributions			
Number	Received	Title	Source
[191]	2012-08-31	A report on China's Broadband Development	China (People's Republic of)
[188]	2012-08-27	Education Transformation – Investment for the future of children and countries	Intel Corporation
[185]	2012-08-23	Strategies for Financing Universal Broadband Access	BDT Focal Point for Question 7-3/1
[173]	2012-08-02	Argentina Connected	Argentine Republic
[172]	2012-08-02	Federal backbone and provincial fibre-optic network	Argentine Republic
[143]	2012-07-02	Draft Report on Question 7-3/1	Rapporteur for Question 7-3/1
[140]	2012-06-27	Business model for creating wireless smart cities	LET'S GOWEX S.A., (Spain)
[125]	2012-06-04	Report of the Rapporteur Group Meeting on Question 7-3/1, Geneva, 27 April 2012	Rapporteur for Question 7-3/1
[106]	2011-08-24	Research on China's Universal Access to Broadband Services	China (People's Republic of)
[105] +Ann.1	2011-08-24	NGA Deployment in Switzerland: Joint FTTH Rollout Activities of Swisscom and Electricity Grid Operators – the Swiss Model	Switzerland
[104] +Ann.1	2011-08-23	L'accès haut débit en Suisse – Situation actuelle et cadre à l'intervention publique	Switzerland
[103]	2011-08-24	Resources and materials developed under HAP Programme 3	BDT Focal Point
[90]	2011-08-18	National broadband program of Mongolia approved by the Cabinet of Government to achieve goal of broadband commission and ITU declarations	Mongolia
[87]	2011-08-18	Current results of the Broadband Access Program for Brazilian Public Schools in Urban Areas	Brazil
[86]	2011-08-18	Stratégie de développement des services large bande en RDC	Dem. Rep. of Congo
[85] +Add.1	2011-08-17	Universal Service Fund (USF)	Intel Corporation (United States of America)
[80]	2011-08-08	Draft outline of the Report for Question 7-3/1	Rapporteur for Question 7-3/1
[68]	2011-07-11	Servicios de banda ancha y redes de acceso alámbricas	Compañía Anónima Nacional Teléfonos de Venezuela
[52]	2011-06-08	Report of the Rapporteur's Group Meeting on Question 7-3/1, Geneva, 13 March 2011	Rapporteur for Question 7-3/1

Study Group Contributions			
Number	Received	Title	Source
[37] (Rev.1)	2010-09-17	Draft Work Programme for Question 7-3/1	Co-Rapporteur for Question 7-3/1
[13]	2010-09-07	Proposal for Research Project on Promoting Universal Access to Broadband Services	China
[5]	2010-09-06	Resources and materials developed under DAP Programme 1: Regulatory reform, related to the topic of regulatory policies on universal access to broadband (Study Group 1, Question 7-3/1)	BDT Focal Point
[4]	2010-09-06	National broadband/ICT plans: Policy objectives for success	Intel Corporation (United States)

Information Documents			
Number	Received	Title	Source
[31]	2011-08-09	The informatization promotion fund in Korea	Korea (Rep. of)
[26]	2011-08-19	Analysis of factors that influence both the demand of broadband services and the deployment of broadband networks	Egypt
[20]	2011-08-19	Connectivité rurale et accès universel	Burundi
[17]	2011-08-18	Uganda's approach to implementing broadband connectivity in underserved areas	Uganda
[15]	2011-08-18	Enhanced broadband building authentication programme	Korea
[3] +Ann.1	2011-05-16	Overview of the ITU Project on Wireless Broadband Master Plans in the Asia-Pacific Region	BDT Focal Point
[2]	2011-04-20	About the ITU Academy	BDT Programme 4
[1]	2011-04-08	Proposal on guidelines for the selection of ITU-T and ITU-R Questions	Rapporteur for Question 7-3/1

Rapporteur's Group Contributions			
Number	Received	Title	Source
[32]	2013-04-17	Final List of Participants for the Rapporteur Group Meeting for Question 7-3/1, Geneva, 16 April 2013	Telecommunication Development Bureau
[31]	2013-04-09	List of Information Documents	Telecommunication Development Bureau
[30] (Rev.1)	2013-03-06	Draft Agenda for Rapporteur Group Meeting for Question 7-3/1, Geneva, Tuesday, 16 April 2012	Rapporteur for Question 7-3/1
[29] +Add.1	2013-03-04	Draft Report on Question 7-3/1 Document also available with revision marks in the Addendum	Rapporteur for Question 7-3/1
[28]	2013-03-01	Key messages for NGN broadband deployment and some possible approaches	BDT Focal Point for Question 7-3/1

Rapporteur's Group Contributions			
Number	Received	Title	Source
[27]	2013-02-21	Some statistical data on broadband and universal service	BDT Focal Point for Question 7-3/1
[26] +Add.1	2013-02-18	Work Programme for Question 7-3/1 for 2010-2014 Document also available with revision marks in the Addendum	Rapporteur for Question 7-3/1
[25]	2013-02-04	Reference and Resource for the Draft Report on Question 7-3/1	International Telecommunications Satellite Organization
[24]	2013-02-04	Satellite solutions for digital inclusion	International Telecommunications Satellite Organization , European Telecommunications Satellite Organisation , International Mobile Satellite Organization
[23]	2013-01-08	Access to telecommunication/ICT services by persons with disabilities and with special needs	Rwanda (Republic of)
[22]	2012-11-09	Revision of Questions 7-3/1 and 18-2/1	THALES Communications
[21]	2012-05-01	Final list of participants for the Rapporteur Group Meeting on Question 7-3/1, Geneva, 27 April 2012	Telecommunication Development Bureau
[20]	2012-04-16	Measures towards universal access to broadband in Bangladesh	Bangladesh (People's Republic of)
[19]	2012-04-12	Inventory of the universal telecommunication service in Senegal	Senegal (Republic of)
[18] +Ann.1-10	2012-04-03	Resources developed under HAP Programme 3:ICTEye	BDT Focal Point for Question 7-3/1
[17]	2012-03-21	National Broadband Master Plan Implementation Project: An effort towards Universal Access to Broadband Services in Bhutan	Bhutan (Kingdom of)
[16]	2012-03-07	Resources and materials developed under HAP Programme 3	BDT Focal Point for Question 7-3/1
[15]	2012-02-10	References and Resources for the Draft Report on Question 7-3/1	Rapporteur for Question 7-3/1
[14]	2012-02-01	Preliminary Draft Report for Question 7-3/1	Rapporteur for Question 7-3/1
[13]	2012-02-08	Draft text for survey: "Developing a global compendium of policy and regulatory initiatives/ interventions for developing telecommunications/ICTs/broadband in rural and remote areas"	Nepal(Republic of)
[12]	2011-09-05	Pakistan USF Broadband Programme	Pakistan (Islamic Republic of)
[11]	2011-09-05	Adjustment of Current Policies and Issuing New Policies for Promoting Broadband in Viet Nam	Viet Nam (Socialist Republic of)
[10]	2012-02-02	Draft Agenda for Rapporteur Group Meeting on Question 7-3/1, Geneva, 27 April 2012	Rapporteur for Question 7-3/1
[9]	2011-05-19	Final list of participants for the Rapporteur's Group Meeting on Question 7-3/1, Geneva, 13 May 2011	Telecommunication Development Bureau (BDT)

Rapporteur's Group Contributions			
Number	Received	Title	Source
[8]	2011-05-12	Implémentation d'un réseau large bande pour l'amélioration de l'accessibilité aux services large bande en RDC	Democratic Republic of the Congo
[7]	2011-05-11	Draft outline of the Report on Question 7-3/1	Rapporteur for Question 7-3/1
[6]	2011-04-27	The Brazilian experience with Centers of digital inclusion	Brazil
[5] +Ann.1	2011-04-14	High-speed broadband for all in Finland	Finland
[4]	2011-04-13	Accès universel aux services large bande au Burkina Faso: de la volonté politique à la réalité	Burkina Faso
[3]	2011-03-08	Input from BDT Programme 3: Enabling environment (2010/2011)	BDT Focal Point
[2]	2011-03-07	Resources and materials developed under HAP Programme 3: Enabling environment related to the topic of Regulatory policies on universal access to broadband (Study Group 1, Question 7-3/1)	BDT Focal Point
[1]	2011-02-08	Draft agenda of the Rapporteur's Group meeting on Question 7-3/1, Geneva, Friday 13 May 2011	Co-Rapporteurs for Question 7-3/1

Other documents – Reports			
Number	Received	Title	Source
[21] (Rev.1)	2012-09-10	Report of the Rapporteur Group meeting on Question 7-3/1 (Geneva, 10 September 2012)	Rapporteur for Question 7-3/1
[12] (Rev.1)	2011-08-29	Report of the Rapporteur Group meeting on Question 7-3/1 (Geneva, 5 September 2011)	Rapporteur for Question 7-3/1
[1] (Rev.1)	2010-09-20	Report of the Meeting of the Rapporteur's Group on Question 7-3/1 (Geneva, Monday 20 September 2010, 14:30 – 15:45)	Acting Rapporteur for Question 7-3/1

Annex II — Definition of Question 7-3/1

Definition of Question 7-3/1 – Implementation of universal access to broadband services

1 Statement of the situation

At the last meeting of ITU-D Study Group 1, held in Geneva in September 2009, it was agreed by all that the issue of universal service was of considerable importance for all countries, particularly developing countries, and that it should be investigated further under a revised Question during the 2010-2014 study period.

During the fourth ITU-D study period (2006-2010), the Rapporteur's Group on Question 7-2/1 ("Regulatory policies on universal access to broadband services") achieved its designated objectives and completed the report on regulatory policies on universal access to broadband services, with the help of experts from Study Groups 1 and 2.

As the World Summit on the Information Society (WSIS) and the Global Symposium for Regulators (GSR) have highlighted, the challenge facing policy-makers and regulators lies in the increasing development of broadband technologies and services, particularly in order to expand access to telecommunications/information and communication technologies (ICTs) in unserved communities, especially in landlocked or rural areas.

New applications using broadband access or voice over IP have brought down the real cost of supplying voice or data services, thus allowing many countries, particularly developing countries, to give previously unserved communities access to telecommunications/ICTs at market prices. In this new environment, there is a need to carry out a comprehensive analysis on the applicability of regulatory policies promoting universal access to such services. A revised Question for the next ITU-D study period will therefore be proposed at WTDC-10.

At its meeting in September 2009 in Geneva, the Rapporteur's Group drafted the revised Question, entitled "Implementation of universal access to broadband services". It was proposed that the draft Question be introduced to all ITU-D members at the Study Group 1 meeting.

2 Question for study

2.1 In many countries, unprecedented technological advances are being made in the telecommunication sector, with the development of wired and wireless broadband systems that can provide voice, video and data communication services.

2.2 On account of these changes, regulatory policy for broadband constitutes a roadmap for more effective development of this technology and its applications.

2.3 The regulatory implications relate mainly to the following issues:

- Synergies among telecommunications/ICT stakeholders.
- Financing and allocation of funds for universal service.
- Capacity building in rural and/or underprivileged communities.
- Development of local content, including services and applications.

3 Expected output

During the next ITU-D study period (2010-2014), the Rapporteur's Group on universal access/service will examine various issues concerning the implementation of universal access to broadband services.

To this end, a comprehensive analysis needs to be made in order to fuel reflection on the applicability and implementation of universal access policies in member countries. The following points will have to be analysed:

- Optimum coordination among stakeholders in the development of universal service for broadband (policy-makers, regulators, operators and other stakeholders).
- Diversification of means of financing universal access.
- Optimizing funds and allocating them more effectively for universal access to broadband services.
- Capacity building in rural and/or underprivileged communities.
- Development of local content, including services and implications.

4 Timing

4.1 After two years, the draft report on the subject should be submitted to Study Group 1.

4.2 The draft final report and any proposed draft Recommendation(s) are to be submitted to Study Group 1 within four years.

4.3 The Rapporteur's Group will work in collaboration with BDT, and particularly with the Centres of Excellence programme, to implement on the ground, through training seminars, the lessons learned from study of the Question. The Rapporteur's Group will take the results into consideration, including the projects stemming from the second phase of WSIS.

4.4 The activities of the Rapporteur's Group will come to an end within four years.

5 Proposers

Developed countries, developing countries and LDCs.

6 Sources of input

Firstly, documentary research into the issue being studied will be carried out, as required, within and outside ITU. This approach will generate an inventory of sources of information and documents relevant to the study. Reports from international and regional organizations, studies by consulting firms and research bodies will thus be consulted.

Secondly, the Rapporteur's Group will complete its analysis with empirical research. Here, the experience of member countries of the Rapporteur's Group and projects stemming from WSIS will be the main sources of information used to analyse reasons for success or failure. This work will be done by means of electronic exchanges. There will also be milestone meetings to discuss the content of the sources of input and of the draft outline for the final report.

7 Target audience

Target audience	Developed countries	Developing countries ¹
Telecommunication policy-makers	Interested.	Highly interested because of lack of experience.
Telecommunication regulators	Interested and have experience with different models.	Highly interested. Some countries have immediate need for information.

Target audience	Developed countries	Developing countries ¹
Service providers/operators	New entrants, regardless of size, extremely interested.	New entrants, regardless of size, extremely interested.
Manufacturers	Highly interested, as study will promote development of infrastructure.	Highly interested as study will promote development of infrastructure.
Consumer associations	Interested.	Study will promote development of services adapted to the needs of communities.

a) Target audience

The foregoing evaluation matrix shows that telecommunication policy-makers, regulators and service providers from least developed countries (LDCs) and developing countries will all be highly interested in the results of the study of this Question. Policy-makers and regulators from developed countries will also be interested. Manufacturers and consumer associations too will show a keen interest in this Question, given that the adoption of appropriate regulatory measures will facilitate development of infrastructure and of services adapted to the needs of communities.

b) Proposed methods for the implementation of the results

The outputs of the study (report and guidelines) will be distributed as widely as possible in accordance with ITU-D working methods. However, given the importance of this issue, BDT could also conduct regional meetings/seminars, perhaps in conjunction with regional telecommunication organizations, to disseminate the results of the study of the Question. These results should be passed on to the annual ITU-D Global Symposium for Regulators whenever its themes include universal access, convergence or broadband services, and should be published by ITU for wider distribution.

8 Proposed methods of handling the Question

Within the framework of Study Group 1.

9 Coordination

Given that the issue of universal access is related to other issues currently being studied or programmes being managed by ITU, coordination will be required:

- with ITU-D's routine activities;
- with the other Questions being studied by the study groups;
- with the work being done in the other ITU Sectors.

10 Other relevant information

Any other information that may become available during the period of validity of this Question.

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