Module-3-Providing-ICTs-to-Indigenous-Peoples

Table of Contents

Introduction 6
1 ICT Development for Indigenous Peoples 7
1.1 Why have a module on Indigenous peoples? 7
1.2 How is this module organized? 8
1.2.1 Contents of Chapter 2. Who are the Indigenous peoples? 8
1.2.2 Contents of Chapter 3. What is the role of governments in the generation of an enabling environment for ICTs in Indigenous communities? 9
1.2.3 Contents of Chapter 4. What is the role of Indigenous communities in the use of ICTs for their own development? 10
1.2.4 Contents of Chapter 5. What have we learned and how do we see the future? 11
2 Who are the Indigenous peoples? 12
2.1 A look into the Indigenous world 12
2.1.1 Indigenous Peoples´ geographical distribution 13
2.1.1.1 The Circumpolar North 13
2.1.1.2 North America 14
2.1.1.3 Mexico, Central America and South America 14
2.1.1.4 Australia and the Pacific 15
2.1.1.5 Asia 15
2.1.1.6 Middle East 16
2.1.1.7 Africa 16
2.1.2 Indigenous peoples on the world stage 17
2.2 The rights of Indigenous peoples and ICTs 17
2.2.1 Convention 169 18
2.2.2 Declaration on the Rights of Indigenous Peoples. 18
2.2.3 The World Summit on the Information Society (WSIS). 19
2.2.4 The Economic and Social Council (ECOSOC) Resolution 46/2006. 19
2.2.5 United Nations Millennium Declaration. 20
2.2.6 United Nations Permanent Forum on Indigenous Issues. 20
2.2.7 The 5th Ministerial Forum for Latin America, Caribbean and European Union on the Information Society. 21

2.2.8 The Recommendation on the Promotion and the Use of Multilingualism and Universal Access in Cyberspace (2003) of UNESCO. 21
2.2.9 Resolution 46 (Doha 2006) on Indigenous peoples. 21
2.2.10 Resolution PCC.I/1 (XV-01). Issued by the Inter-American Commission Telecommunications through the CICC. 22
2.3 Indigenous peoples and ICTs 22
3. What is the role of governments in creating an ICT enabling environment for Indigenous Peoples? 25
3.1 Introduction 25
3.2 Regulation 26
3.2.1 Key Regulatory Elements 26
3.2.1.1 Universal Service 27
3.2.1.2 Spectrum Management 27
3.2.1.3 Support on training and equipment acquisition 28
3.2.1.4 Protecting and promoting the production of indigenous content 28
3.2.1.5 Participation of Indigenous peoples 29
3.2.2 Best practices 30
3.2.3 Evaluation of Regulatory Elements 30
3.3 Infrastructure and Technology 31
3.3.1. Key Aspects of public policy 33
3.3.1.1 Flexible framework that takes into account the local context in the selection of technology 33
3.3.1.2 Fostering technology adoption 34
3.3.1.3 Infrastructure 35
3.3.1.4 Technological Research 35
3.3.2 Methodology for implementation 36
3.3.2.1 Base Domain 37
3.3.2.2 The User's Domain 38
3.3.2.3 Technology Domain 39
3.3.3 Best practices 40
3.3.4. Self-evaluation 42
3.4 Industry 43
3.4.1 Key Elements 44

3.4.1.1 Using a model based on economies of scale 45
3.4.1.2 Stimulus to the development of local companies 45
3.4.1.3 Technological Neutrality 46
3.4.1.4 Access to essential facilities 46
3.4.2 Best Practices 47
3.4.3 Self-evaluation 49
3.5 Local Content 50
3.5.1. Key elements 51
3.5.1.1 Key elements of an environment conducive to the development of local content 51
3.5.1.2 Market creation 53
3.5.1.3 Appropriate Public Policy 53
3.5.1.4 Training and availability of means of production 54
3.5.1.5 Access to Local Production 55
3.5.2 Key aspects of production of content in community access centers 55
3.5.3. Best practices 56
3.5.4. Self-Evaluation 58
3.6. Capacity-Building 59
3.6.1 Key Elements of Capacity-Building 62
3.6.1.1 Development of a Comprehensive Plan 62
3.6.1.2 Staff with Skills and Abilities for Intercultural Community Work 62
3.6.1.3 Self-sustainability Guidance 63
3.6.1.4 Always Start with the Organization of a Community Committee 64
3.6.1.5 Start From a Participative Appraisal 65
3.6.1.6 Appraisal-Based Training 65
3.6.1.7 Network Creation 66
3.6.1.8 Preparation to Meet Local Training Plans 66
3.6.2 Best Practices 68
3.6.3 Self-Evaluation 69
3.7 Participation 70
3.7.1 Key elements 71
3.7.1.1 Community Participation in the whole process 72
3.7.1.2 Complete Autonomy in the Decision-Making Process 72

3.7.1.3 Participation in Capacity-Building 73
3.7.1.4 Participation with Resources and Capacities 74
3.7.1.5 Cultural Relevance 74
3.7.2 Best Practice 75
3.7.3 Self-evaluation 76
4. What is the Role of Indigenous Peoples in the Installation and Operation of Access Centres Located in Schools in their Communities? 79
4.1 Discovering 80
4.1.1 Case Study (Regional Indigenous Council of Cauca) 82
4.1.2 Are we heading in the right direction? 84
4.2 Organizing 84
4.2.1 Best practice 86
4.2.2 Are we heading in the right direction? 87
4.3 Defining 87
4.3.1 Best practice (The Guarani Communication Unit) 89
4.3.2 Are we heading in the right direction? 90
4.4 Connecting 91
4.4.1 Best practice (The School Shelter of Chemax) 91
4.4.2 Are we heading in the right direction? 92
4.5 Networking 92
4.5.1 Best practice (Asodigua Telecenter) 94
4.5.2 Are we heading in the right direction? 94
4.6 Telling and reflecting the local story 95
5 What have we learned? 96
5.1 Administration and management 96
5.2 Indigenous Communities 97
5.3 Tailor-Made Solutions 97
Credits 99
References 100
Reference Documents 103

Introduction

?The objective of this module is to provide the main factors that should be considered in implementing a community connectivity program to interconnect schools in Indigenous communities. The approach that this module incorporates is oriented towards creating an enabling environment for ICT development in Indigenous communities.

The module is divided into five chapters. Chapter 1 is an introductory chapter that explains the reason why a module on Indigenous communities is needed, and explains in detail the general structure of it. Chapter 2 shows Indigenous peoples' situations, their needs and aspirations regarding information and communications technologies (ICTs), and how those needs and aspirations have been incorporated into various international agreements and recommendations. Chapter 3 presents the main aspects of a public policy designed to create an enabling environment for the development of ICTs in Indigenous communities. Chapter 4 offers basic organizational guidance that any indigenous community should take into account when designing and implementing a community ICT plan. Finally, Chapter 5 invites readers to reflect on the content of the module, and to contribute with experiences and thoughts on the subject.

1 ICT Development for Indigenous Peoples

The objective of this module is to provide the main factors that should be considered in implementing a community connectivity program to interconnect schools in Indigenous communities. The approach that this module incorporates is oriented towards creating an enabling environment for ICT development in Indigenous communities.

The module is divided into five chapters. Chapter 1 is an introductory chapter that explains the reason why a module on Indigenous communities is needed, and explains in detail the general structure of it. Chapter 2 shows Indigenous peoples' situations, their needs and aspirations regarding information and communications technologies (ICTs), and how those needs and aspirations have been incorporated into various international agreements and recommendations. Chapter 3 presents the main aspects of a public policy designed to create an enabling environment for the development of ICTs in Indigenous communities. Chapter 4 offers basic organizational guidance that any indigenous community should take into account when designing and implementing a community ICT plan. Finally, Chapter 5 invites readers to reflect on the content of the module, and to contribute with experiences and thoughts on the subject.
?

1.1 Why have a module on Indigenous peoples?

ICTs are a proven and effective tool to promote social and human development in many Indigenous communities in remote regions. ICTs are a means of communication with members of the community that have left in search of a better life in the cities or even in other countries. For some Indigenous people, these technologies are a means to promote their culture in other places, to access information about events in other parts of the world or in their own country, to start educational processes, and to promote the protection of their rights. Many examples of these processes will be included in this module.

In spite of the ICT benefits that digital community centers in schools offer to Indigenous communities, in many cases these centers have been abandoned or underused by the community. The simple installation of community centers does not ensure their success. So it is useful to ask what conditions

have to be promoted so that these centers become an essential step for the development of the community, instead of passing into disuse.

The success or failure of these centers in fulfilling their objectives for poverty alleviation and the improvement of life conditions of indigenous peoples is not mere coincidence. Choices made during installation can determine the success or failure of an ICT center. These choices include what technologies to embrace, how to organize community involvement, and others. In essence, if the cultural, economic, political and social characteristics of the Indigenous peoples are taken into account, as indicated by the Declaration of Principles of the World Summit on the Information Society (WSIS), it can constitute an important step in ensuring the use of ICTs for development.

Experience has shown what steps should be taken during program development, policy design, implementation and management of school digital community centers, so that indigenous peoples can attain the benefits of ICTs, while preserving their cultural heritage. In an effort to achieve the objectives of the Special Initiative for Indigenous Peoples and Communities, issued by the World Telecommunication Development Conference of 2006, this toolkit aims to share with government bodies, sector members and Indigenous communities the knowledge obtained from this experience.
?

1.2 How is this module organized?

The objective of this module is to provide the basis for implementing a community connectivity program through the interconnection of schools in Indigenous communities. In order to achieve this goal, it is necessary first to answer a series of questions that will help establish the panorama in which we will work.

1.2.1 Contents of Chapter 2. Who are the Indigenous peoples?

We will create a short sketch of Indigenous peoples - who they are, where they are and their main social and cultural characteristics - in order to understand why they need special attention.

Very frequently, poverty is considered the common characteristic among Indigenous peoples.

Therefore, it appears to make sense that policies needed to help Indigenous people are the same policies being applied to help all poor people. Nevertheless, Indigenous peoples often are anything but poor; many of them are located in areas with vast amounts of natural resources. Moreover, they have ancestral cultural wealth that carries great knowledge about the biodiversity of the zones that they inhabit. This knowledge has allowed Indigenous peoples to conserve their ancestral homes and thrive in them. Furthermore, Indigenous peoples possess solid community structures and rich cultural expressions, among many other social goods.

The above notwithstanding, Indigenous peoples do have the lowest rates of human development. This dichotomy is not simple, and in order to approach such underprivileged communities we must be aware of the causes of their marginalization, so that we can correct the barriers that have prevented their development and avoid those barriers in the design of development projects.

The first part of this toolkit aims to do precisely that, in order to understand Indigenous peoples? particular situations and the realities in which community ICT access programmes have to operate.
?

1.2.2 Contents of Chapter 3. What is the role of governments in the generation of an enabling environment for ICTs in Indigenous communities?

Helping Indigenous communities is not only a question of providing connectivity -- that is, it is not simply about giving materials or bringing services. Instead, it is about creating an environment that allows Indigenous peoples the full use of ICTs to promote their own development. The key is providing an enabling environment that encourages and facilitates the development of (1) ICTs in Indigenous communities and (2) applications and content from and for the people in those communities. School community access centers are the final link in a chain of necessary steps, all of which must be completed in order for the centers to function.

How can a school community access center operate when there are no trained personnel to maintain it or guarantee its use, or when the energy supply is inadequate, or when, by implementing such centers, vested local interests are strengthened, or when it is impossible to increase the service according to demand?

Studies of this issue have identified several factors that are essential in order to sustain communication in remote areas. These factors include skill building, community participation in policy design, the availability of radio frequencies and the incorporation of relevant content. Chapter 3 will provide examples of best practices and general guidelines for an evaluation of policies and programs developed on a national scale.

1.2.3 Contents of Chapter 4. What is the role of Indigenous communities in the use of ICTs for their own development?

The arrival of a new technology does not always generate benefits to the community. There have been cases of communities that used to be self-sustaining, but with the arrival of electric power ceased to be so[1], leaving them completely dependent on external support. New technologies always promote changes; whether these changes are beneficial or harmful for the community depends on its ability to seize the possibilities and utilize them in the most optimal way, according to their development aspirations.

The government's role is to provide all of the necessary facilities in order to sustain ICT programs. It provides the enabling environment. But the success or failure of these programmes, depends entirely on the community. It is the community that determines how ICTs are used and for what purposes.

Chapter 4 draws attention to some of the key factors that communities must take into account during the installation of school digital centers. It explores what questions should be asked and answered before the implementation of these projects, and it highlights the organizational aspects that can be developed, along with ways to measure organizational performance.

Chapter 4 offers examples of practices followed by several communities in order to guarantee that ICTs provide benefits for them.

[1] Inishbofin Island in Ireland is such a case.

1.2.4 Contents of Chapter 5. What have we learned and how do we see the future?

Finally, it is worth reflecting on all the topics covered, but above all, it is important to consider that this work has not yet concluded. Technological progress moves hastily, as those needs addressed by it do. We cannot predict the future; nevertheless, we can visualize some of the challenges that will have to be faced. This chapter leaves an open door for governments and communities to continue enriching this toolkit with their experiences in connecting schools in indigenous areas.

2 Who are the Indigenous peoples?

According to Convention 169 of the International Labor Organization (ILO) concerning Indigenous and tribal peoples in independent countries, Indigenous peoples are the heirs of original peoples. They "descend from populations that inhabited a geographical region at the time of the conquest or colonization or during the establishment of current state borders and that, whatever their legal status, preserve all their social, economic, cultural and political institutions, or part of them." This section of the toolkit explores the unique nature of Indigenous peoples and their ICT needs.

2.1 A look into the Indigenous world

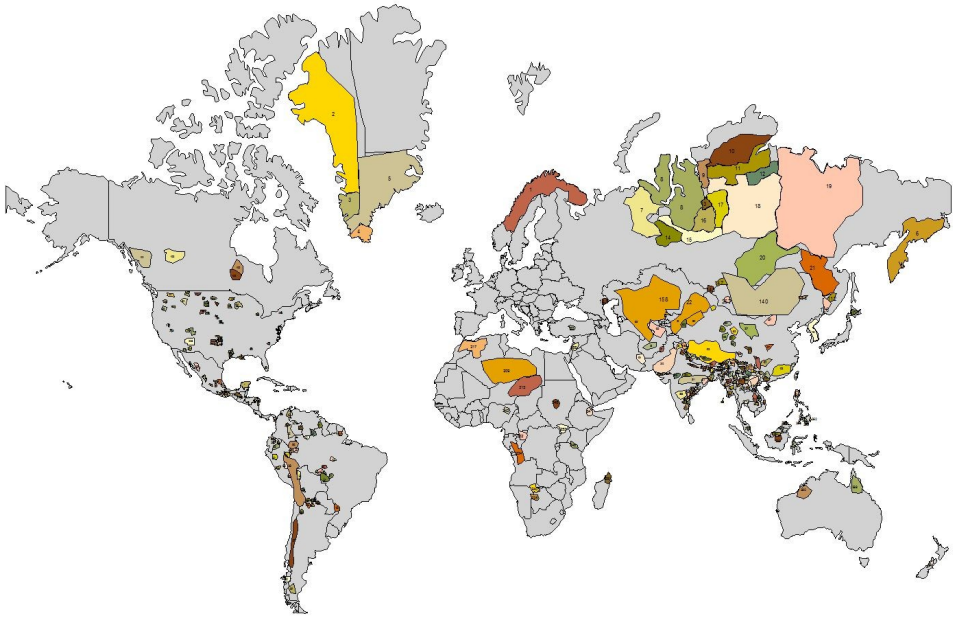
Present on all continents, there are more than 320 million Indigenous people, accounting for 5 per cent of the world's population. However, Indigenous peoples account for 75 per cent of the world's population living in conditions of great poverty. Conflicts over land and natural resources, discrimination and exclusion, human rights violations and the extinction of traditional cultures are evident from Greenland to the Americas, Africa and Indonesia, and they greatly affect the indigenous peoples.

The United Nations Report on Indigenous Peoples reveals an alarming situation. In the United States, an indigenous person is 600 times more likely to contract tuberculosis than the general population, and is 62 per cent more likely to commit suicide. In Australia, an indigenous child is likely to die 20 years before his or her non-native counterpart. While the difference in life expectancy in Nepal is also 20 years, in Guatemala, the difference in life expectancy is 13 years, and in New Zealand it is 11. At the same time, forced displacement and systematic extermination are some of the offenses committed daily against Indigenous peoples. In this context, digital exclusion has only accentuated mechanisms of isolation, oppression and exclusion of these populations.

Against this backdrop, technological progress represents many positive possibilities. The Internet, radio and television are some of the opportunities that Indigenous peoples now often enjoy. These new media have been employed as instruments to denounce violence and abuse, to support cohesion, and to strengthen and promote the appreciation of their cultures. Therefore, the involvement of original peoples in the Information Society is embedded in their use and adoption of ICTs. There are clear signs that the "digital divide" can turn into a "digital opportunity".

2.1.1 Indigenous Peoples´ geographical distribution

According to The Indigenous World 2009 publication -- which is considered to be one of the major efforts in mapping the presence of Indigenous peoples -- there are 350 million Indigenous people in the world, distributed as described in the following sub-sections.



2.1.1.1 The Circumpolar North

More than 200,000 Indigenous people live in the frozen zone that includes Greenland, Sápmi-Sweden, Russia and Canada. The problems these people face include cultural discrimination, global warming and increasing exploitation of natural resources by large companies. In Greenland, 57,000 Indigenous people from the Inuit ethnic group occupy the coast of the Earth's largest island, which has been semi-autonomous from Denmark since 1979.

It is estimated that between 50,000 and 100,000 Indigenous people live in the northern part of Scandinavia, distributed between Sweden, Norway, Finland and Russia. The Indigenous people embody linguistic minorities in all of these countries. Another 50,000 people belong to more than 100 Indigenous groups living in northern Russia, including Siberia and the Russian Far East.

In the Northwest Territories of Canada, the Indigenous population accounts for 22,000 people, or more than half of the local population. In addition, Canada's 2006 census indicated that about 24,900 of the 29,325 residents of Nunavut were members of first nations populations (mostly Inuit). Nunavut was created in 1999 from part of the Northwest Territories as a majority-Indigenous territory.
?

2.1.1.2 North America

More than 3 million Indigenous peoples live in the USA and Canada. The Canadian government identifies more than 1 million people as “aboriginal peoples,” representing 3.6 per cent of the population, the majority of whom live in reservations. In the United States, there are 335 recognized tribes (not counting those in Alaska). Some 2 million people declare themselves exclusively Indigenous, and another 4 million consider themselves a combination of different ethnic groups. Among these populations, life expectancy is lower than the national average, and poverty rates are higher than among average citizens. One serious problem is the large number of young Indigenous people who commit suicide.

2.1.1.3 Mexico, Central America and South America

According to conservative estimates, 30 million Indigenous peoples live in this region. Due to the subjugation and exploitation produced during the conquest by Spain and Portugal, the peoples of this region have been characterized throughout their history by problems of social inequality, migration, conflict over land and water, and the dispossession and gradual loss of control over their lands. Human rights attacks, murders and political imprisonment are a reflection of the violence experienced by these peoples, from Mexico to Chile and Argentina. However, in areas such as Bolivia, Ecuador and Venezuela, there are signs of progress with respect to state recognition of Indigenous rights, as witnessed in the election of Bolivian President Evo Morales, the first South American chief executive considered to be an heir of the original peoples of the continent.

2.1.1.4 Australia and the Pacific

Indigenous peoples have lived in this region for more than 40,000 years, but currently there are only 1.5 million Indigenous people distributed throughout Australia, New Zealand, Guam, Papua New Guinea, Indonesia, Tuvalu and Kiribati. On one hand, ethnic diversity in the context of great biodiversity represents the richness of this insular region. In Papua (New Guinea] alone, there are more than 250 identified ethnic groups, and in Kiribati, 99 per cent of its inhabitants are indigenous Micronesians. On the other hand, this region is marked by social inequality.

Aboriginal Australian life expectancy is 17 years less than that of the non-Indigenous population in that country. In an unprecedented event, the Australian government recently apologized to the “Stolen Generation,” acknowledging the involvement of government power in crimes against the native population.
?

2.1.1.5 Asia

One of the great challenges in the region is the state recognition (or lack thereof) of Indigenous peoples, which makes the procurement of accurate population data more difficult. It is estimated that there are more than 200 million Indigenous people distributed from Japan to Indonesia and Bangladesh.

In China, Indigenous peoples account for 10 per cent of the population, which equates to nearly 125 million people, many of them in the poorest population segment in the country. The Japanese government has officially recognized the Ainu people on the island of Hokkaido, but only since the year 2000. Nine million Indigenous people inhabit the most isolated areas of the Philippines, where the lack of access to basic social services is more prominent, and where few opportunities for economic integration can be found.

In Malaysia, around 3 million Indigenous people are affected by the private exploitation of monoculture crops. Fifteen million people in Vietnam are known as the “Nine Mountain People.” Meanwhile, there are 461 groups in India that are classified as “protected tribes,” totaling more than 85 million people. However, there are constant accusations of attempts to exterminate these minority populations

throughout the region.

?

2.1.1.6 Middle East

Palestinian Bedouins in Israel, who total 100,000, live in semi-nomadic tribes in the country's mountainous deserts. They are often victims of the armed conflicts that plague the region. There are also significant Bedouin populations in Jordan, Egypt and other nearby Arab countries.

2.1.1.7 Africa

It is estimated that 40 million Indigenous people live on this continent. Populations living in the northern Sahara desert are nomadic or semi-nomadic, living by shepherding, hunting and gathering. In Mali alone, 13 million nomadic pastoralists can be found, while in Ethiopia there are 10 million Indigenous people. In Tanzania, there are 125 distinct ethnic groups, all of whom belong to some of the poorest populations on the planet.

The situation is no different in Central Africa. In Ruanda and nearby Congo, Indigenous peoples form a large collection of expatriate groups who were endangered by the civil war that ravaged the country -- more than 60 per cent only manage to eat once a day. In Burundi, deforestation generated in order to develop urban areas has reduced hunting and gathering opportunities, accelerating the loss of the Indigenous population. In the Republic of Chad, 99 per cent of Indigenous people are illiterate, and in Congo, the systematic violation of human rights affects the welfare of the majority of the population.

In southern Africa, the government of Botswana does not recognize Indigenous people, because it considers all citizens to be Indigenous. Throughout the region, there is great difficulty in finding exact numbers for Indigenous populations.

?

2.1.2 Indigenous peoples on the world stage

Economic, political and social marginalization is not the only situation shared by Indigenous peoples. These groups are also heirs to ancestral cultural wealth, guardians of their land and responsible for the preservation of life on it. They share communal ways of living in which each member of the community plays a role. Social organization features reciprocal relationships among all members, encompassing even the natural environment.

In general, we can say that Indigenous peoples share a number of values, which are manifested in different ways, but that coincide at a basic level and can be observed in expressions of their community life. Among those values are: specific democratic institutions; values of respect for, and a special relationship with, nature; land and resource organization and management; particular forms of family organization; and, of course, special priorities with respect to development.

All of the above highlights that Indigenous peoples have their own characteristics that distinguish them from the general population, and therefore have a series of specific rights. Guaranteeing these rights ensures the opportunity of pursuing development commensurate with their aspirations. Therefore, various treaties and recommendations have been established in the international arena in order to guarantee those rights -- most recently, the *2007 Declaration on the Rights of Indigenous Peoples*.

Recommended Reading

?

- The Indigenous World 2009 (IWGIA). http://www.iwgia.org/sw617.asp
- The first State of the World's Indigenous Peoples Report. http://www.un.org/esa/socdev/unpfii/en/sowip.html
  ?

2.2 The rights of Indigenous peoples and ICTs

The assertion of Indigenous rights is a topic of recent discussion. It reflects the historic struggle of these peoples to ensure the recognition of their communities, their cultures, and their ownership of land and natural resources. Many nascent agreements and international resolutions promote sustainable

development and seek the participation of traditional peoples in the “Information Society.” Most of them include goals and objectives for implementing Indigenous rights associated with the right to communicate. Some of the most important are explored in the following subsections.

2.2.1 Convention 169

Convention 169 concerning Indigenous and Tribal Peoples in Independent Countries, of the International Labor Organization (ILO) was signed in 1989, and was the first document that acknowledged Indigenous rights. It guarantees the members of these populations the equal enjoyment of rights and opportunities that the national legislation gives other members of the population, in order to protect their social and cultural identity, their customs and traditions, and their institutions. One quarter of the Convention is dedicated to education and Indigenous means of communication as key strategies for development. It can be found at:

http://www.ilo.org/ilolex/cgi-lex/convde.pl?C169
?

2.2.2 Declaration on the Rights of Indigenous Peoples.

This Declaration is the main document on Indigenous rights. Signed by the General Assembly of the United Nations in 2007, it acknowledges that all peoples contribute to the diversity and richness of civilizations and cultures, which constitute the common heritage of humankind. With respect to the “Information Society,” the Declaration acknowledges the rights these peoples have to promote and protect their cultures, knowledge and traditions through the most varied forms of expression. In its Article 16, the Declaration determines that:

> "Indigenous peoples have the right to establish their own media in their own languages and to have access to all forms of non-indigenous media without discrimination."

In order to achieve this, it directs that:

- States will take effective measures to ensure that public media adequately reflect Indigenous cultural diversity.

- States, with no detriment to their obligation to ensure freedom of expression, should encourage the private media to adequately reflect Indigenous cultural diversity.

?

2.2.3 The World Summit on the Information Society (WSIS).

The WSIS took place in two phases between 2003 and 2005, as a joint effort of the United Nations and ITU. Governments and world leaders made a strong commitment to bridge the digital divide with respect to ICT access at a global level, with specific regard to telecommunications and the Internet.

The WSIS identified a need to promote the development goals included in the *United Nations Millennium Declaration* and the *Declaration on Human Rights*, through ensuring universal access to ICTs and the sharing of knowledge and information with underprivileged peoples. Action plans and policy proposals have resulted in an attempt to reduce such inequalities.

With regard to Indigenous peoples, the WSIS set targets that sought to connect all villages to the Internet and to establish community access points. Additionally, it drew attention to the fact that these targets have to respect the cultural heritage of each community. WSIS documents can be found at:

http://www.itu.int/wsis/basic/about.html

?

2.2.4 The Economic and Social Council (ECOSOC) Resolution 46/2006.

This Resolution stressed the right of Indigenous peoples to new ICTs. It sought to ensure greater integration between traditional peoples and their cultures in the “Information Society,” reinforcing the goals and commitments established by the Summit. It can be found at:

http://www.un.org/docs/ecosoc/documents/2006/resolutions/Resolution%202006-46.pdf

?

2.2.5 United Nations Millennium Declaration.

The UN has set 2015 as the deadline for achieving most of its Millennium Development Goals (MDGs). These goals provide concrete and numerical benchmarks for tackling extreme poverty in its many dimensions. The first goal is to eradicate extreme poverty and hunger, the second is to achieve universal primary education and eradication of illiteracy, and the eighth goal is to develop a global partnership for development. The need for ICT connectivity in Indigenous populations is reaffirmed by these three goals. Nevertheless, as the deadline approaches, the world is immersed in an unprecedented economic crisis. A 2009 report, which keeps track of the progress toward meeting the MDG goals, can be found at the following webpage:

http://www.un.org/spanish/millenniumgoals/pdf/MDG_Report_2009_SP_r3.pdf
?

2.2.6 United Nations Permanent Forum on Indigenous Issues.

The Forum reiterates recommendations on the dissemination of information on Indigenous issues. It also promotes new ways to publicize the Forum to Indigenous communities and organizations through radio programmes, publications and other relevant cultural and educational means. The Forum provides expert advice and recommendations to various programs, funds and agencies of the United Nations System, raising awareness through the dissemination of relevant information and promoting the integration and coordination of activities related to indigenous issues. See the link below:

http://www.un.org/esa/socdev/unpfii/

2.2.7 The 5th Ministerial Forum for Latin America, Caribbean and European Union on the Information Society.

Held in 2010, this forum agreed to strengthen existing strategies that attempt to diminish the digital divide and to recognize the specific needs of Indigenous populations in Latin America, the Caribbean and Europe. See the following link:

http://www.eclac.cl/cgi-bin/getprod.asp?xml=/socinfo/noticias/noticias/6/38716/P38716.xml&base=/socinfo/tpl/top-bottom.xsl

?

2.2.8 The Recommendation on the Promotion and the Use of Multilingualism and Universal Access in Cyberspace (2003) of UNESCO.

This document recommended that member states promote and support the construction of capacities for the production of Indigenous content on the Internet. It also extended several invitations to promote the incorporation of Indigenous Internet content.

http://portal.unesco.org/ci/en/ev.php-URL_ID=13475&URL_DO=DO_TOPIC&URL_SECTION=201.html#content

?

2.2.9 Resolution 46 (Doha 2006) on Indigenous peoples.

This resolution, issued by ITU, drew attention to the Global Initiative on Indigenous Peoples and recognized the problems that affect them worldwide, incorporating measures to promote sustainable and accessible universal access to ICTs. The resolution dictates that all of those actions shall be done in a framework that allows ICTs to contribute to Indigenous peoples' development, according their cultural heritage and values.

ITU has also published two additional resolutions related to Indigenous peoples. *Resolution 11* addresses connectivity in rural and isolated communities, where Indigenous people usually live. A second resolution, adopted during the World Telecommunications Development Conference 2010 in Hyderabad, focuses on strengthening the technical capacities of Indigenous peoples in telecommunications.

?

2.2.10 Resolution PCC.I/1 (XV-01). Issued by the Inter-American Commission Telecommunications through the CICC.

This resolution addressed a series of recommendations about plans for the development of telecommunications for Indigenous peoples. The goal was to provide a comprehensive vision for the creation of an enabling environment of ICTs for Indigenous peoples. The resolution sought to take into account such factors as technology, skills training, content, and administration of services, among others.

2.3 Indigenous peoples and ICTs

Until now, this toolkit has provided an overview of the situation of Indigenous peoples in the world and their rights to ICT capabilities. On one hand, the difficult situation Indigenous peoples face in their development efforts has been illustrated. These difficulties often result from the expropriation of their lands and resources or the lack of recognition of their languages, customs and values. On the other hand, we have seen a series of Indigenous rights being recognized, giving Indigenous peoples the ability to decide upon their own forms of development in accordance with their ancestral cultures.

ICTs are central to this contradictory situation. On one hand, the indiscriminant dissemination of ICT media, such as television and radio, have altered the values and customs of these peoples by introducing hegemonic cultures into their communities. But these media also can introduce content oriented toward Indigenous people, tangibly contributing to the conservation of their cultural heritage. One example of such programming is the Telecentre Port Saavedra, located in a Mapuche community

in Chile. The telecenter uses ICTs to inform and promote natural telemedicine. Native healers can use the Internet to connect to distant communities and to practice their ancestral knowledge.

There are also Indigenous broadcasters in Australia, New Zealand and Canada that produce and transmit programming appropriate for the cultures and development needs of their Indigenous populations.

New technologies can become important allies in the economic and social development of these peoples. Experience has shown that telecommunication access centers run by schools or community associations promote local-interest content, disseminating the values and the worldviews of the local people. In this way, they become mechanisms of ethnic expression and education, decreasing technological "apartheid" and alienation.

In Peru, for example, Indigenous people have used the Maranon Community Radio station to denounce the conflicts and murders perpetrated by the state and by businesses interested in the exploitation of Amazonia. The allegations of such crimes have pierced the airwaves, traveled around the world and led to the establishment of a process of dialogue between the different parties.

This adoption of current technology is still recent and innovative. While many Indigenous people remain unaware of the existence of these tools, some have already embraced the possibilities these technologies present.

Among young people, ICTs are undoubtedly an attractive tool. In fact, young people consider them a necessity. ICTs exert a fascination that captivates younger generations almost instantly. This has been the case with such initiatives as the E-Way in Laos, where young Tibetans form part of the less than 15,000 who use the Web in Laos. This situation has facilitated employment and learning opportunities for this group.

Among older generations, however, attitudes are different. Interaction with technology often generates resistance and fear of loss of culture and tradition.

For leaders such as Margarita Neuculen, a traditional herbalist among the Mapuche people, the technological path can provide balance, because the technology itself may lead to liberation. The challenge is to blend ancestral knowledge with innovation, preserving ethnic identity and traditional ways of life in the face of the contemporary world.[2]

The task, then, is to find a balance that allows ICTs to function within the scope of the development objectives that the Indigenous communities themselves have identified.

Recommended Reading

- Srinivasan, R. (2006). *Indigenous, ethnic and cultural articulations of new media*. International Journal of Cultural Studies, 9(4), 497–518
- Indigenous Peoples and the Information Society in Latin America and the Caribean: A Framework for Action, American Connectivity Institute http://lanic.utexas.edu/project/etext/llilas/claspo/workingpapers/indigpeople.pdf
- Report of the Conference for Thematic Planning for WSIS Tunisia http://www.itu.int/wsis/docs2/thematic/canada/final-report-indigenous.pdf
  ?

[2] Carvin, A., Surman, M. (Editors),? "From the Ground up; The Evolution of the Telecentre Movement", telecentre.org, IDRC, SDC (2006).

3. What is the role of governments in creating an ICT enabling environment for Indigenous Peoples?

The creation of an enabling environment means providing the conditions necessary for ICT projects to be adequately developed and sustained. Often, connectivity projects destined for Indigenous zones emphasize their long preparation, yet major investments often are made in facilities that may be abandoned within a few months. Other projects get off the ground using government support and yet never become self-sustaining. Still others become successful projects in small locales but never succeed in extending their reach over wider areas, wasting their full potential.

The goal is to build sustainability using a firm foundation at the very beginning of each project. That way, the goals of each community can be achieved by supporting incremental development along the way. This section of the module explores the ways to create an enabling environment for sustainability of ICT development in Indigenous areas.
?

3.1 Introduction

In order to create an enabling environment for ICT development, the following areas of work for an appropriate connectivity program have been identified:

- Regulation -- to provide a conducive, legal framework for the proper functioning of the project.?
- Technology -- to provide favorable development of appropriate technology in remote areas, so that the technological tools best fit the needs and characteristics of the community.
- Industry -- to provide an economic environment that allows for the development of upstream services and industries in remote areas that offer affordable and quality services to the access centers.
- Content -- to construct and implement a series of factors allowing the creation, dissemination and distribution of local content.
- Capacity-building -- to develop organizational schemes, agents and competencies to ensure that Indigenous communities have the skills needed to incubate, develop and sustain school-based access centers.

- Participation - to ensure the effectiveness of tasks carried out in all the areas outlined above.

This section will continue to chart a path that touches on all the areas of an enabling environment. The path leads from the national level to the local level and back again. Finally, this section confirms the need to work at all levels in order to attain sustainable networks that contribute to Indigenous peoples' achieving their development objectives.

Recommended reading:

- Gómez & Casadiego: Letter to aunt Ofelia http://www.idrc.ca/en/ev-8199-201-1-DO_TOPIC.html
- Gómez, Martinez et alt. Paths Beyond Connectivity http://www.idrc.ca/uploads/user-S/10359897120Paths_Beyond_Connectivity.pdf
- Promoting equitable access, meaningful use and appropriation of the Internet: recommendations for ECOSOC http://www.idrc.ca/es/ev-4300-201-1-DO_TOPIC.html

?

3.2 Regulation

Regulation provides the basis for an enabling environment for ICTs in Indigenous communities; it is the first element to address in creating such an environment. The key points cater to the normative content necessary to stimulate the coverage, the availability of frequencies, the financial sustainability of the media, the promotion of Indigenous content and the participation of Indigenous peoples in the design, implementation and evaluation of policies that directly affect them.

3.2.1 Key Regulatory Elements

Several countries have incorporated these elements in their legislation, although the manner in which they have been incorporated varies according to a country's particular historical, political and social conditions. As a way to identify best practices, this section has chosen to feature Canada, one of the countries that has incorporated these elements, to a greater extent than others, in its legislation.

3.2.1.1 Universal Service

The development of ICTs in Indigenous communities usually occurs with great difficulty. Access problems and low profitability of access networks often mean that network deployment is unattractive for telecommunications companies. So there is a need to apply norms related to universal service in order to ensure the provision of infrastructure for these areas. The provisions in this issue are varied; however, Canada is notable in making a universal service guarantee for its citizens that has brought broadband communication even to its more remote areas.

Clear regulations and policies on universal service are needed for school access centers, to ensure the availability of affordable Internet access and the evolution of broadband services.
?

3.2.1.2 Spectrum Management

Proper spectrum planning should reflect national priorities and international goals represented by the WSIS agreements and other documents. Indigenous peoples? communication needs have to represent a top priority, which must be reflected in planning. As in the case of universal service, governmental provisions are varied and cater to national strategies. Some countries like Argentina, in the case of Indigenous communications broadcasting, have reserved areas of the spectrum for Indigenous radio and television.

Another important aspect in spectrum planning is ensuring availability of frequencies for communication in remote areas. In Nepal, the transition from a highly restrictive monarchy resulted in the availability of greater incentives and freedoms. This led to the granting of licenses in the 2.4 GHz and 5.8 GHz bands. Licenses were given for VSAT and ISP services in rural areas, at a nominal cost of about USD 2 per year. All charges for voice over IP (PC-to-PC and IP-to-IP[3]) were eliminated. All of these actions culminated in facilitating the deployment of communication in rural areas.

In the same fashion, in Africa, countries like Kenya, Uganda, Tanzania, Ghana, Ivory Coast, and Nigeria have adopted regulatory measures to facilitate VSAT communication, allowing more widespread rural communication at more accessible costs.

The element of establishing enabling regulation through appropriate spectrum management helps to promote community access centers located in schools. Proper spectrum management ensures the availability of frequencies for centers' connectivity and for the evolution towards more advanced communication systems or means of communication that can be developed by the communities themselves.
?

[3]Case Study: Study Question 10-2/2 ID227

3.2.1.3 Support on training and equipment acquisition

This element ensures sustainability of the centers, facilitating the presence of technical personnel in the area who can maintain the network, update and develop centers, and produce local content material.

In Bolivia, federal resources are allotted to purchase and modernize equipment in the community radio stations. With this incentive, coupled with training actions, the stations of Indigenous communities are being transformed into local connection centers.

In Brazil, the *Culture Points* project offers multimedia equipment, such as video cameras, laptops and projectors, for Indigenous associations. In this case, training occurs in regional encounters with youth leaders and also virtually, using free software tools.

Further south, in Uruguay, the law governing community media directs telecommunications officials to support and train employees of access centers. This legislation has facilitated Indigenous groups' access to technological innovations.
?

3.2.1.4 Protecting and promoting the production of indigenous content

The following essential elements must be included in any regulation that promotes production and protection of Indigenous content:

- The recognition of multiculturalism and multilingualism, as well as the state's interest in their protection.
- Incentives for Indigenous content production.
- Information availability and transparency, avoiding unnecessary obstacles to accessing content.
- Ensuring conditions for the dissemination of Indigenous peoples? content through state-operated or franchised radio stations, and
- Support for the establishment of Indigenous media.

The compliance of legislation with these characteristics enables access centers installed in schools to find relevant content and provides incentives for production of local programming, including educational content that can contribute to multicultural education.
?

3.2.1.5 Participation of Indigenous peoples

Consulting Indigenous peoples and promoting their participation in debates over the issues that affect them is a fundamental responsibility. So it is the basis for any design and implementation of public policies aimed at helping Indigenous people. The design and implementation of media is no exception.

Moreover, regulations to ensure participation have to be successful in two key areas: (a) participation in the design of programs, policies and policy regulation; and (b) participation in the design, implementation and evaluation of projects implemented in their communities.

With respect to the latter, some countries have implemented permanent consultation and participation bodies, as is the case of the Te Pini Kökiri (Maori Ministry of Development). Te Pini Kökiri is the main consulting body representing the Maori people to the New Zealand government, as well as an advisor to the government on all public policy issues related to the Maori people.

Nevertheless, many countries, and especially on the African continent, have more work to do in enacting legislation and recognizing the existence of Indigenous peoples in their territories. Kenya?s government has taken this step in recent years.

There are other notable regulations, such as those in Argentina, which establish the participation of an Indigenous representative in the Federal Council of Audiovisual Communication, which is the advisory, consulting and supervisory body of the Federal Audiovisual Communication Services Authority.

Finally, one of the most important elements is to incorporate community participation into the general practice of communications development in Indigenous communities throughout all phases of projects. These issues will be addressed in the relevant section of this toolkit.

?

3.2.2 Best practices

After reviewing several key regulatory issues, some best practices can be identified. Establishing one overriding, general best practice system would be impossible, since countries have different characteristics. Moreover, the regulations involved in a project of this nature are highly diverse, making it very difficult to untangle the legal fabric that allows ICT development in the Indigenous communities of a given country.

Without doubt, the Canadian regulatory approach is an example worth highlighting. It incorporates universal access rights, consulting and participation schemes that conform to the daily practice of public policies on indigenous issues, financing schemes for communities, and indigenous peoples' television systems. These are just some of the elements articulated in a legal and public policy system conducive to the development of ICTs in Indigenous communities.
?

3.2.3 Evaluation of Regulatory Elements

It may be useful to analyze a given regulatory system using the checklist provided in the chart below. As noted in the previous section, the key elements can be incorporated in various ways into regulatory systems. Therefore, it must be pointed out that some of the questions included on the table below would have no application in some regulatory systems.

??

Elements included in the regulatory system	Yes	No
Includes provisions on universal service	?	?
Includes specific provisions on Indigenous communities' coverage	?	?
Includes disaggregated information on coverage in Indigenous communities	?	?
Includes a specific program on Indigenous communities' coverage	?	?
Establishes spectrum reserves for Indigenous broadcasting	?	?
Incorporates state obligations for the promotion and production of local content	?	?
Incorporates obligations for broadcasting concessions with respect to Indigenous content	?	?
Includes consultation and participation bodies for Indigenous peoples' telecommunications	?	?
Includes obligations on consultation and participation in the implementation of projects	?	?
Includes a regulatory approach aimed at ICT development in remote areas	?	?

?

?

?

3.3 Infrastructure and Technology

Infrastructure and technology are generally the most salient elements in ICT development policies for remote areas and Indigenous communities. In many cases, the policies achieve only the build-out of infrastructure that is later abandoned or underused. Therefore, technology adoption is, without a doubt, an essential element to be considered, with the most appropriate technology being matched to any given locality.

In order to determine the key aspects of technology selection, we have to consider the preconditions of public policy that allow for the development of infrastructure. In the same vein, we also must consider the methodological aspects that have to be incorporated in the development of ICT projects.

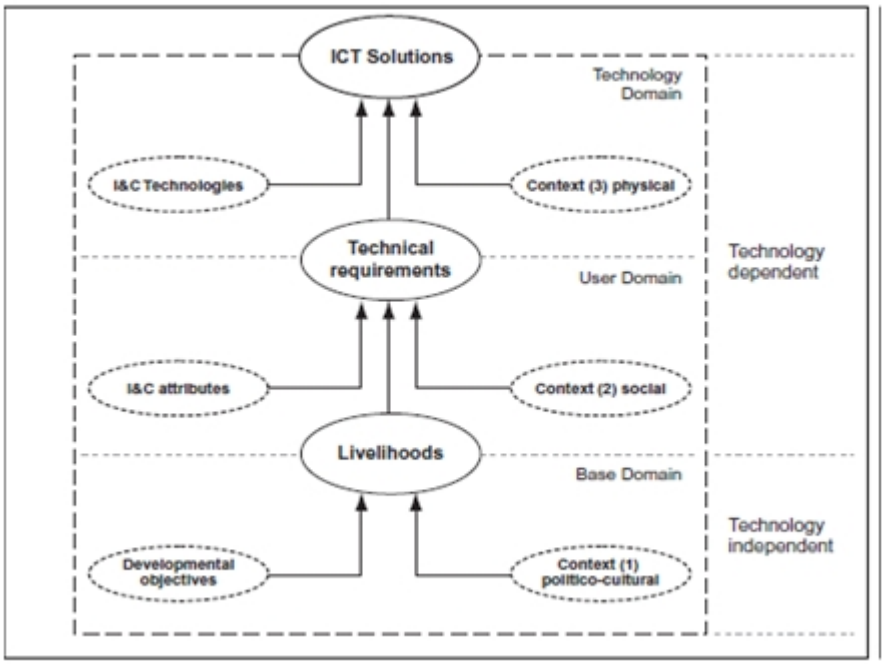
With respect to the latter, the model of Percoladora of Mallaeu & Rocke[4] has been taken as a base, which indicates that the selection of a technological solution must be addressed in three areas:

(1) The base domain, which refers to the political and cultural context;

(2) The user domain, which refers to the social context; and

(3) The technology domain, referring to the physical context.

Figure 1: **Percolator Model for Contemplating ICT Intervention Solutions**



Source: Selecting Sustainable ICT Solutions for Pro-poor Intervention in Digital Poverty, Latin American and Caribean Perspectives IDRC-2007, p. 117.

?

[4] Selecting Sustainable ICT Solutions for Pro-poor Intervention in Digital Poverty, Latin American and Caribean Perspectives IDRC-2007.

3.3.1. Key Aspects of public policy

Using these domains, the toolkit will separately explore the key aspects of public policy and implementation of projects.

3.3.1.1 Flexible framework that takes into account the local context in the selection of technology

The public policy framework must establish implementation and development stages to enable the analysis of needs and conditions that will be used later in the selection of appropriate technology. In this regard, programs that automatically negate all possibility of selecting new technologies have no place.

The existence of programs wedded to a particular technology leads to problems that can be exemplified by a case in a country in the Americas, where VSAT antennas were chosen for the national community access centers programme. This ignored the fact that there were communities where broadband was available via cable or fiber optic and others where weather conditions made VSAT an unsuitable technology. During the next phase of the programme, the connectivity centers had to adopt other types of technology with greater capacity and better economic efficiency -- where they could. All in all, this process led to unnecessary expenses that could have been avoided if local circumstances and needs had been identified and taken into account before determining which technology to use.

Conversely, projects such as the Canadian National Research Project for the First Nations on Telehealth, indicate the technology to be adopted[5] only after carrying out an appraisal of local needs and going through extensive planning with local users.
?

[5]See Community Services in the 21st Century: First Nations & Inuit Telehealth Services, Canada 2001

3.3.1.2 Fostering technology adoption

The adoption of technology takes place when the need is combined with the tool, and the community personalizes the technology in order to meet its needs. The same technology is further leveraged as users identify other needs that it can meet. Therefore, the process must go step-by-step, identifying needs incrementally and identifying how technology can meet those needs. Gumucio Dagrón describes this process clearly in the following sentence:

> *I always say, to buy bread on the corner you have to go on foot, to go five blocks take a bicycle and to go a kilometer perhaps take the bus, but do not start with the bus to go to buy bread on the corner…*

Indeed, there are cases in which the availability of resources leads to the installation of systems that go beyond the needs of the community. Or, sometimes systems installed are overtaken by the needs of the community because they did not allow for later transition to more advanced technology.

In other cases, given the local conditions and the availability of resources, many communication centers work with equipment that might seem obsolete but actually works well in that situation.

> *The Guarani Communication Unit (UGC) works in the realm of audiovisual production using equipment that today can be considered obsolete, but it is the only available. Currently, no production equipment in digital video is available… For audio-visual records two VHS Panasonic, (the M900 and the M1300) are used. One difficulty with such apparatus is maintaining battery life when they are being used in areas without electricity. For this reason, a 12-volt motorcycle battery was adapted to a VHS battery in order to obtain a long-lasting energy generator. The UGC team took advantage of such field obstacles, which imparted valuable experiences and learning and which ultimately resulted in greater group cohesion*[6].

As shown by the example in the technology component, the most important aspect is ensuring that the community adapts the technology creatively and according to its needs.
?

[6] Yasarekomo: An Experience in Indigenous Communication in Bolivia, FAO 2004 p.20
http://www.fao.org/docrep/006/y5311s/y5311s00.htm

3.3.1.3 Infrastructure

At this point, this toolkit has focused on two aspects: (1) the creation and sharing of community infrastructure and (2) the establishment of connectivity infrastructure in more populous locations or bases, from where wireless communication can be deployed.

With respect to the first aspect, it is important to consider that many remote areas lack basic infrastructure, such as electricity. This problem in itself determines some of the characteristics of the equipment that is to be used. There is also the need to share the prevailing infrastructure with other users. So it is important for digital telecenters to utilize and also strengthen existing infrastructure. Because of this aspect, sometimes it is convenient to install digital centers in schools or other pre-existing media centers in the community, such as community radio stations or post offices, assuming care is been taken to ensure collective access to these centers.

Regarding the second aspect, it is important to consider that it is difficult and uneconomical to have access to fiber optics in all locations. However, if fiber nodes are available in nearby cities, it is easier to provide wireless broadband connections from those points to surrounding communities. Such solutions have proven to be an excellent path to the development of broadband connections to remote locations. Examples of this type of solution are found in India, where each taluka (county) avails itself of broadband connections with wireless coverage in order of 20 or 30 km radius.[7]
?

[7] See Jhunjhunwala, *N-Logue: the story of a rural service provider in India*, The Journal of Community Informatics, (2004), Vol. 1, Issue 1, pp. 30-38

3.3.1.4 Technological Research

The characteristics of rural areas require the development of systems and specific equipment, incentives for research, development of local capacity for innovation of equipment and networks, and the creation of commercial opportunities for the provision of services in these areas. All of those actions stimulate the creation of equipment that meets local needs.

The technology developed for remote areas must possess at least the following features:

- Cost-effective
- Accessible
- Robust
- Scalable
- Capable of accepting the applications considered relevant.

An example of the development of technologies suitable for specific conditions is the CorDECT system developed in India, which is capable of operating at 55?C. This avoids additional requirements such as air-conditioning. It also requires only 1 kilowatt (KW) of total energy consumption. With these adaptations, CorDECT can simultaneously offer both voice and Internet access at 35/70 kbps to locations within a radius of 25 km.

Public policies for ICT development should be flexible, allowing the choice of technology to be made on a case-by-case basis. They should encourage participation by allowing needs to be shaped by whichever technology is to be adopted. Developers should build infrastructure for the deployment of networks in surrounding areas and/or those most difficult to access. They should share existing infrastructure within communities, and they should promote research and technological development for communication in remote areas.

Recommended reading:

- Jhunjhunwala et alt., *N-Logue The Story of a Rural Service Provider in India* http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN023008.pdf
- *Community Services in the 21st Century: First Nations & Inuit Telehealth Services.* National First Nations Telehealth Research Project HTF-NA402 1998 _ 2001
  ?

3.3.2 Methodology for implementation

As mentioned at the beginning of this section, the Percoladora of Mallaeu & Rocke (2007) model will be considered as the basis for the key elements in the area of technology application. The model indicates three bases for selection of appropriate technology, each of which provides characteristics, expectations and needs that have to be taken into account in selecting the technology that could meet those needs.

This analysis is performed in three stages that provide data about the context in which a network or equipment would be installed, the possible uses that the network will be given, the characteristics of users and the various networks or protocols available in the area, along with essential data for the choice of appropriate technology that is to be used.
?

3.3.2.1 Base Domain

In this section, the developmental objectives of the community are determined within its particular political and cultural context. To do that, an integrated analysis is done of the distinctive micro and macro factors that determine the prevailing cultural systems.

At this point the analysis must consider three aspects:
1. The *available resources*: These are the natural resources, technologies, skills, knowledge and capacities, access to education, sources of credit and social networks.
2. The *resource context*: Whatever limits or, conversely, provides access to and use of these resources, and what?s more, the political, economic and technological tendencies, events such as disasters, epidemics, permanent and transient social movements and seasonal cycles, productive factors and prices, etc.
3. The *social environment*: The political realities and institutions that affect the ways in which resources are used.

For this analysis, there are varying methods. One of them is known as "Sustainable Livelihoods,"[8] which incorporates various analytical tools that allow for the identification of the aforementioned characteristics. But in general, any participatory appraisal methods that cover the mentioned areas can be applied.

To better illustrate this point, consider the problems of distributing agricultural products in Zambia. Despite the fact that farmers in this nation are considered to be the best in the world in the production of some products such as cotton, they face unscrupulous buyers who pay below the market price, taking advantage of the difficulties that grain producers encounter in finding adequate markets for new products. Once this problem was analyzed and understood as a development priority, mobile telephones (i.e., texting) were deployed to give farmers access to accurate market prices and buyers.[9]

In other words, the analysis performed in this area determines the development objective to be achieved and determines the context in which technology will be adopted. This, in turn, acts as a first filter in order to rule out or identify appropriate technological tools.

[8] International Fund for Agricultural Development (IFAD) offers several materials on sustainable livelihoods www.ifad.org

[9] See Trading Commodities via SMS IFAD http://operations.ifad.org/web/guest/country/voice/tags/zambia/shemp

?

3.3.2.2 The User's Domain

In this section, the characteristics of the user are considered in order to define the type of applications that can be used and that are required. For example, if in any given community the majority of the people are illiterate, it is likely that the use of audio and video tools will predominate. The working capacity of the system must, then, allow for the use of audio and video applications. The same capacity would allow for the operation tele-consulting, pc-to-pc video links and the sending of images under secure conditions. In additional to the users' needs, it is expedient to take into consideration the technical capacity of the network administrators.

In northern Uganda -- a zone of conflict, in which there are several refugee camps -- a WiFi network has been developed to communicate among the camps and with the aid organizations that work in them. This network has been developed through the BOSCO Uganda Relief Project (Battery Operated Systems for Community Outreach) and the social enterprise Inveneo, which incorporates the participation of users as a key element in the design of the network. This project took into account, for example, that the network would be operated by non-technical administrators with little experience in use of ICT. Therefore, the infrastructure had to incorporate easy-to-operate equipment.

?

3.3.2.3 Technology Domain

This section reviews the availability of technology that meets the needs identified in the previous sections. Additionally, the most appropriate type of technology is determined according to the physical context in which it will operate.

The technologies include access technologies, access devices and applications. They are evaluated in accordance with the results obtained in each of the areas analyzed.
?

In examining access technologies, we review their availability and whether they can provide appropriate services to suit the region and the users' characteristics. In this way, it can be decided if a fixed telephone, mobile phone, radio, television, fiber optic, cable, PLC, WiFi or WIMAX technology is to be adopted and used.
?

Access devices are the mechanisms through which users interface and obtain information. In choosing the appropriate devices, the following characteristics must be taken into account:

- ?User characteristics
- The environment in which the technology operates, including physical conditions,
- Price,
- Availability,
- Ease of use,
- Mobility, and
- Energy consumption.

The applications in question refer to the software or utility that will be provided for the access devices and the network. At this point, in addition to the arguments arising from the user and physical contexts, it is important to consider the elements in the basic environment that will define many of the benefits or tele-applications. These may be directly related to development priorities.

Here we can return to the example used in the Base Conditions section: the Zambian grain producers for whom the developmental priority was access to markets. In that case, the producers had access to

the mobile telephones at an affordable cost. Even though they also had access to the Internet through a portal at a digital community center, the most accessible and sought-after technology, considering the physical characteristics of the place and users, was the cellular phone.

This analysis is very relevant to the construction of an access center at a school in an indigenous community. Before building any such center, the questions that should be asked are: What is required? Who is going to use it and for what purpose? What are the geographical features of the area? Answers to these questions should dictate the characteristics of the network, equipment selection, required applications and, as we have seen, the creation of capacities for the use of the technology.

Recommended reading

- Mallalieu & Rocke, Selecting Sustainable ICT Solutions for Pro-poor Intervention in Digital Poverty, Latin American and Caribbean Perspectives IDRC-2007 http://dirsi.net/sites/default/files/dirsi_07_DP06_en.pdf
- ICT Project and Sustainability Primer: Things to Consider When Designing ICT Projects for Low-resource Environments. Inveneo http://www.inveneo.org/download/Inveneo_ICT-Sustainability_Primer0809.pdf
  ?

3.3.3 Best practices

The best practices in the field of technology and infrastructure will be presented in the same way as the Key elements. The best practices with regard to public policy will be discussed first, followed by those in the field of methodology or organization for the choice of appropriate technology.

With respect to public policy, the experience of Canada in the National Research Project on Telemedicine in the First Nations has been noted, as it incorporates a broad research phase in order to determine appropriate technology. All the characteristics that have been highlighted are included, and results in the provision of technology and specific equipment for each of the Indigenous communities have been selected, commensurate with their needs and characteristics.

With respect to methodology, it is interesting to point out the work in technology selection adopted by the Nepal Wireless Networking project, which was presented by ITU Study Group 2 in the theme of

rural communication. This community project initiative is an example of technology selection that incorporates many of the elements mentioned in the methodological part of this document. Moreover, it represents the clearest application of the phrase uttered by Albert Einstein, “Imagination is more important than knowledge.”

The Nepal Wireless Networking project arose from the aspiration of several communities to find ways to connect themselves with the nearest city[10], Pokhara. At the start of the project, two European volunteers brought two wireless cards, with which they began to experiment, using some homemade antennas. Before this, local people had already sought other options such as VSATs, satellite phones and microwave antennas, but the community was unable to cover the cost of such technologies.

At the time that the project was launched, WiFi technology was new, and it was not known if it was effective over long distances. The telecommunication engineers, with whom the community of Nangi was in contact, thought it was impossible to bridge the 40 kilometers between Nangi and Pokhara. However, tests were successful, and the community chose to adopt this technology for several reasons: (1) it was the most economically viable technology on the market, (2) it was the easiest to learn to use, (3) it used very little energy and therefore was easily adapted to solar energy and, (4) the cost of operation and maintenance was minimal. At the time of the report of the study group, the equipment operated by the community[11] was Motorola Canopy, which employs spectrum in either 2.4 GHz or 5.8 GHz bands for long distance.

After its commencement, this project received international financial support from ITU and other bodies for the purchase of equipment. Today, the project has become a community company directed by a secondary school in the region. The project now provides the district of Myagdi Nepal with educational support, telemedicine services, local electronic commerce and VoIP telephony.

The community followed a logical process to select the technology – something that government agencies sometimes fail to do when establishing national communication programs in remote regions.

The challenge for Indigenous peoples is to ensure that new technologies are culturally adapted to the specific needs of each community. Therefore, the selection and deployment of the technology to be used has to be tailored to benefit Indigenous communities. Otherwise, connecting the community can run counter to community values, such as autonomy, that Indigenous communities seek to strengthen. Moreover, the sustainability of the project will undoubtedly be affected.[12]

?

[10] For example, the Indigenous community of Nangi where no phone, internet or health services is to be found, is two days away fron Pokhara on foot.

[11] For more information about the network infrastructure consult the Study Question case study: 10-2/2 ID227

[12] Srinivasan, R. (2006). Indigenous, Ethnic and Cultural Articulations of New Media. *International Journal of Cultural Studies*, 9(4), 497–518

3.3.4. Self-evaluation

This section will help verify whether the ICT development policies and programmes in remote communities encourage technological adoption by indigenous communities. The inclusion of these practices will ensure that the technology chosen is adequate for the characteristics and needs of the community, as well as for the project?s technological sustainability in the long term.

?

?

Practices that encourage community adoption of technology	Yes	No
The national connectivity programmes for remote areas allow the choice of technology in accordance with the characteristics of the community	?	?
The specific traits of the community are taken into consideration during the implementation of the project.	?	?
In the selection of the technology to be used, the development priorities of the community and the country are taken into account	?	?
Parameters are in place to verify that these local and national priorities have been taken into account and monitored through e-applications	?	?
In the selection of the technology, the needs and capacities of the users are taken into account	?	?

Parameters are in place to verify that these needs and capacities have been taken into account with respect to the infrastructure and applications	?	?
In the selection of the technology, the physical context and market in which it is to be applied/used are taken into account	?	?
Parameters are in place to verify that these needs and capacities have been taken into account	?	?
Incentives are in place that stimulate research in technology for communication in rural or remote areas	?	?
In general, the individual traits of the community and are taken into account, and participation is assured in the definition and selection of the technology to be used.	?	?

3.4 Industry

It is notable that remote locations represent unattractive markets for telecommunication companies. However, ICT industries can be established in remote areas through attractive business schemes that expand telecommunication coverage in those remote areas without the need for subsidies.

What, therefore, are the elements that stimulate viable and attractive business plans for developing ICT infrastructure in remote areas and in Indigenous communities? What is the role of government in generating them? Prior to exploring the answers to these questions, it is necessary to understand a fundamental idea with respect to economic matters. According to Braudel?s model, there are three levels of economy, each capable of fully satisfying human needs, and with specific institutions that are suitable for each specific economic environment.[13] The three levels are: the subsistence economy, the local economy and the global economy.[14]
?

Commonly, telecommunication coverage schemes do not mesh with this model, and companies that operate in the global economy often attempt to operate in areas with subsistence economies. This requires large subsidies, instead of generating the conditions necessary to create infrastructure suitable for this kind of economy.

?

[13]See, OCDE (1996) *Reconciling Economy and Society: Towards a Plural Economy; Braudel (1980) Civilisation Matérialle, Économie et Capitalism*; Neff (1993) *Desarrollo a Escala Humana: Conceptos y Aplicaciones*.

[14] Diagram based on Haughton (1999) p. 9.

?

3.4.1 Key Elements

At this point, the essential elements that allow community access centers to become successful will be examined, including which factors make the centers sustainable and which allow scalability in the provision of services. The toolkit also will examine the actions that states should adopt to facilitate the development of ICT industries in sustainable rural settings

3.4.1.1 Using a model based on economies of scale

In planning technology expansion in rural communities, it is necessary to examine the whole chain of production, its key actors, and the economic levels in which each operates.

For example, the last link in the chain is the community center, which usually operates in a subsistence economy. Monetary resources are scarce, but important economic resources can be found in the community's inhabitants and their organizations.

In this economic setting, however, it may be difficult to find certain resources that community access centers require, such as technical advice, equipment maintenance, peripherals and other items. These must be sourced from outside the immediate economic environment -- from a higher economic tier (the local economy). It is important that these resources are obtained at the local level and not at a global level, which is often cost-ineffective.

Finally, access to the main backbone network can only be managed by a company that is present in the global economy, since the backbone usually is beyond the reach of local service providers.

The design and implementation of connectivity programs in remote areas must take into account the productive chain described above, and the manner in which actors are coordinated or motivated. This will be looked at later in a representative case study.
?

3.4.1.2 Stimulus to the development of local companies

Once the implementation plan has taken into account the ICT productive chain, it is very likely that micro-entrepreneurs will require incentives or subsidies for its growth and investment. It is possible that there may be groups of willing people who want to employ themselves as installers and provide maintenance or develop software. In spite of their interest, they may lack the skills, materials and/or funds to respond efficiently to the demand or business opportunities that present themselves.

In this sense, business incubators have proved useful for the development of micro-enterprises to meet communication needs in remote areas. An example of such a program is the Indigenous

communications initiative My-Knet, which is supported by the Smart Communities Industry of Canada Program. It began as a system of personal paging services for Indigenous communities of northern Ontario. Today, the initiative boasts a system of broadband communications with multiple applications.

The successful development of micro-enterprises requires access to four essential elements:

- Finance - access to monetary resources;
- Knowledge and technical support;
- Logistics for buying and selling (access to markets for inputs and the possibility of product placement); and
- Ability to share risks.

There are multiple ways of ensuring access to these four elements, depending on national circumstances and the resources available. However, it is necessary that all programmes incorporate the four elements.

?

3.4.1.3 Technological Neutrality

Micro-enterprises operating in Indigenous areas are generally technological innovators. The application of strict quality and service standards can halt the addition of new competitors in this market. So it is important to incorporate internationally accepted principles and technological neutrality in order to avoid a slowdown in the use of certain protocols or technologies for purposes not previously foreseen.

3.4.1.4 Access to essential facilities

Community-level industries require access to essential server facilities and backbone lines, which are usually operated by companies that operate at a global level. It is crucial, then, that micro-enterprises providing telecommunication services in remote areas operate under competitive conditions in order to guarantee community access to communication networks.

Recommended reading

• Galperin & Girard, Microtelcos in Latin America and the Caribbean, in Poverty Digital, the Prospects in Latin America and the Caribbean IDRC-2007, http://dirsi.net/sites/default/files/dirsi_07_DP05_en.pdf

• Jhunjhunwala, n-Logue: The Story of a Rural Service Provider in India. Journal of Community Informatics (2004) V1 issue 1. http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN023008.pdf

• Finquelievich, S. Telecommunications Cooperatives and Social democratization. Telpin a Case Study of Community Organization of the Information Society Magazine of Social Studies Universidad de los Andes (2005) http://redalyc.uaemex.mx/redalyc/pdf/815/81502203.pdf
?

3.4.2 Best Practices

Several countries have opted to eliminate barriers or provide facilities for the development of small social enterprises and social organizations that provide telecommunication services in remote areas. Known in academic circles as micro-telcos, these are small businesses, often organized into associations, which in Argentina (for example) serve about 8 per cent of the domestic market. The groups operating micro-telcos are organized in different ways, either by community inhabitants, local or community governments, or even companies specializing solely in this type of coverage.

A good example of a micro-telco is India's N-Logue, which (among others) received a 2005 WISIS prize. But there is no current information on N-Logue, and even some of the academics in India who have researched the case were unable to indicate whether the company still exists, if it had been taken over, or if it had simply changed its name. Nevertheless, the need to examine its recent performance with greater scope – along with fact that N-Logue represents many of the best practice recommendations made here -- has led to its incorporation in this text.

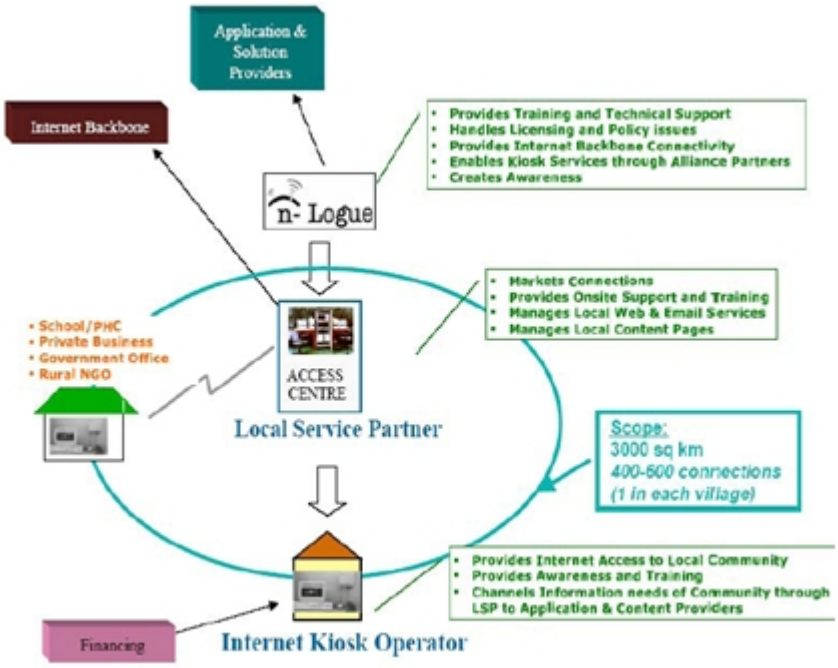
N-Logue is located in India, the second most populous country in the world, where the state telecommunications company has managed to install fiber optic cable in almost every county (talukas). This, in turn, has laid the foundation for extending telecommunications to close-proximity villages (some 300 to 500) within a 30-km radius. The possibility of finding trunk-line infrastructure with which to connect has, without doubt, facilitated the establishment of a company that has been able to connect the surrounding villages through a wireless network.

Although basic infrastructure is certainly important, it is of little use without an appropriate business model. The starting point for N-Logue's business strategy, which the state telecom company also adopted, was to overcome the problem of providing universal service (even in urban areas) by installing assisted telephone operators in stores located no less than 50 meters from a residential zone. This contributed to the creation of a base of micro-enterprises and telecommunication service users that, at the beginning of the new millennium, represented 25 per cent of national, telephone-based communication income.

The first link in this business chain is the Internet kiosk, equipped with a computer, Internet connection, printer and some other accessories such as a Web camera. The kiosks are administered by an entrepreneur from the community, who is normally a young woman who may, or may not, have prior computing knowledge. The Internet kiosk installations are supported through bank credits that can be covered by the income generated by the micro-enterprise.

The second rung on the service ladder requires a service supplier that meets one of the Internet kiosk?s needs, which might typically be equipment repair and maintenance, virus elimination or service connections. Such actors are known as local service providers (LSPs), which are located in each county so that they can respond to any service request within 90 minutes. The LSP plays an essential role in providing connections and reconnections, maintenance and training to Internet kiosk operators. The LSP is an N-Logue partner and is located at the access tower.

Finally, the last link in the service chain is N-Logue itself, which provides access to the network backbone. It coordinates with application providers and content technology providers, trains LSPs and Internet kiosk operators, supplies Internet kiosks with software and hardware, and collaborates with public policy formulators in order to ensure quality service and to develop the markets that support the LSPs and Internet kiosk operators.



As can be seen in this example, all of the recommended elements are incorporated. There is a business design that contemplates economies of scale. Each operator does its part, community centers have access to financing and technical assistance, and there is access to a backbone network.

Argentine telecommunications cooperatives are also a good best practice example. In most cases, community initiatives offer quality services at lower costs than global communications or national suppliers do.

?

3.4.3 Self-evaluation

The table below assesses whether there is an enabling environment for the development of industries that can provide telecommunication services in remote areas. These industries contribute to the community access centers – including those located in schools -- and locate necessary services at accessible prices and at accessible distances for the development of their activities. In sum, these industries become telecommunications services suppliers to neighboring populations.

?

Practices that contribute to the development of an ICT industry in rural areas	Yes	No
Connectivity plans consider the participation of community organizations or social companies or non-profit organizations for the provision of telecommunications services in remote areas (micro-telcos).	?	?
Connectivity plans consider incentives to community organizations or social companies or non-profit organizations for the provision of telecommunications services in remote areas (micro-telcos).	?	?
Connection plans consider the creation of local companies that provide maintenance and service to community access centers.	?	?
Accessible funding exists so that micro-telcos can start, expand or improve their services.	?	?
Access to the backbone network, at affordable prices, is guaranteed	?	?
The adoption of new technology is facilitated while taking into account the special characteristics of these areas.	?	?

3.5 Local Content

Content creation is a topic with various implications. In fact, there is a multiplicity of agreements and studies on the subject of content creation among Indigenous communities. This constitutes a clear demonstration of the importance of content for Indigenous people to exercise their freedom of expression and cultural rights.

In this section, the theme of the content creation will be addressed in two ways: (1) from the perspective of the creation of an enabling environment for the development of content and, (2) from the perspective of what elements should be considered in facilitating the production of content in school-based community access centers located in Indigenous communities.

Before defining the key elements, it should be noted that connectivity planning often leaves out program content. This is like building a road without having any vehicles to travel on it. A national connection plan must be accompanied by a plan to develop content.

It is also necessary for community access center plans, or connectivity through schools, to address this issue, although the need to do so often appears when projects are at a more advanced stage or when the center has been linked to other means of communication, as will be seen at a later point. The production of local programming usually signifies the evolution of community access centers from an information access vehicle to a vehicle of media communication and, while this jump is desirable, it is not easily done.

?

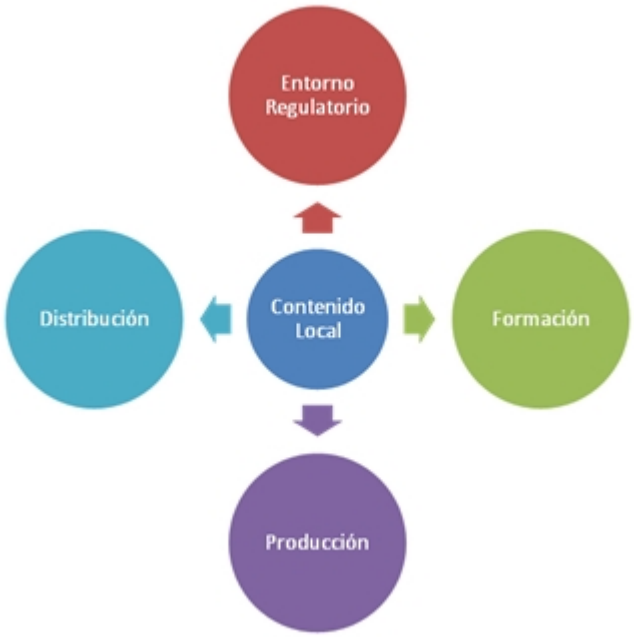
3.5.1. Key elements

In order to explain the key elements, it is best to start with those relating to the creation of an enabling environment for local production. This will be followed by an exploration of factors to be taken into account for the installation and operation of community access centers in Indigenous communities.

3.5.1.1 Key elements of an environment conducive to the development of local content

The following elements in the creation of an enabling environment for the development of local programming should be expressed in a plan or national agenda for local or multicultural content.

- Ensure conditions throughout the cycle of Development of Local Content: All content is part of a cycle, and each part is related to the cycle in its totality. The cycle can be portrayed as follows:



?

For a better understanding of what is being described, let's look at a hypothetical example based partly on actual experience. In this example, it has been decided to create indigenous video centers in order to train members of Indigenous communities in the production of cinema and video films. However, as it turns out, no movie theaters will project the films, mass media outlets ignore them, or the productions are used without consent, because mechanisms do not exist to ensure copyright enforcement.

As a consequence, investment in this case has little effect, as it impacts narrowly in the exercise of cultural rights and freedom of expression. As a result, actor communities and general society have limited access to the resulting content. In other words, the objective of communication is not met, since broadcasters and recipients are few in number.

For that reason, in designing a national plan to produce local or Indigenous content, action must be taken at all stages of the cycle: training, production, distribution and enforcement of regulations.
?

3.5.1.2 Market creation

All local content policy needs to ensure the creation of a market for the distribution of products. Mechanisms for doing so can be varied and are often achieved through their inclusion in local broadcasting obligations that may be commercially beneficial to both sides.

For example, in Mexico, cable television concessionaries are obliged to incorporate at least one hour a day of local content into their scheduling. When this policy was first implemented, the concessionaries were reluctant to fulfill this obligation, but they realized that this gave them a competitive advantage over other television service providers, because local populations prefer local programming in their scheduling. Today, it is possible to find local Indigenous productions on some cable TV channels installed in Indigenous areas.

Another way of generating a market is to ensure the contextualization of communication campaigns destined for Indigenous populations. The government also benefits by ensuring that the recipients more easily understand its message.

Ways of creating markets are manifold, and include festivals, promotion of Indigenous educational content and local production subsidies, etc. Their selection depends on the characteristics of each country and the organization of the various distribution channels in it.
?

3.5.1.3 Appropriate Public Policy

The aspects of public policy that should be included in order to stimulate the promotion of local content programming are varied. Actions should emphasize the need for clear and measurable objectives that must cover the whole cycle of local content development. This means knowing whether the development objectives help fulfill a local content production policy, which can extend from strengthening cultural values of a particular sector to positioning their products in a given market.

In the case of access centers located in schools, some educational activities provide an excellent opportunity for the creation of local content. There have been numerous interesting initiatives within formal and informal education that have been developed from work carried out by children who have

produced stories,[15] films[16] and videos[17] that can then be incorporated as educational material.
?

[15] "WordMakers" is a rural education initiative that works with stories created and illustrated by children from rural schools. http://www.youtube.com/watch?v=DYfMyqVhY0g.

[16] "Holy Hit" is a multiple awarded short film by Dominique Jonard which was produced with children?s drawings and narrated by Indigenous Chamula children http://www.youtube.com/watch?v=DYfMyqVhY0g.

[17] "Window to My Community"; is a series of educational videos with children from various indigenous communities and cultures present their communities. http://ventana.ilce.edu.mx/
?

3.5.1.4 Training and availability of means of production

For production purposes, it is essential that Indigenous communities be able to count on trained members of their communities. Indigenous peoples have shown great ability in the management of audiovisual media, and there are extensive examples of films, videos[18] and Web pages of excellent quality. It often requires just a little training and the means of production to achieve high quality productions. There are abundant examples of success in this field; sometimes it just requires one training event and the provision of the necessary tools for local communities to begin generating local content. This has been the case with Communicators for People, which can be found at the following website, http://www.originarios.org.ar/.

Moreover, it is essential to train individuals to find manuals and courses in Indigenous languages, as well as audio and video tools that can facilitate the required training, as many Indigenous cultures are oral.
?

[18] Guanaba.Net in Cienega, Baharona, Dominican Republic is an important example on how a rural telecenter can develop contents as a result of training offered and community initiatives http://www.youtube.com/watch?v=ZqdDWvMNmUY . This center is, as well, where the local newspaper El Guanabanero is edited http://el-guanabanero.com/

3.5.1.5 Access to Local Production

The Internet has enabled the provision of access to materials that have previously only existed in libraries or public institutions' collections. Often, Indigenous peoples have been the subjects of such material but have had limited or no access to it. However, the materials in question are now increasingly found online, which allows the Indigenous media to find relevant material that can expand their programming. The digitization of Indigenous productions by academic institutions and governments is undoubtedly an essential element for the dissemination of local content.

3.5.2 Key aspects of production of content in community access centers

In addition to training and the availability of means of production, the development of content depends mainly on the existence of a community communication program that is necessarily linked to the existence of a *community life plan* or, in other words, a plan for community development.

The communication program has to identify its recipients, the areas or activities that it will support, and the content through which it will do it, as in the following example:

> *From its inception, the AMCIC Network has developed in conjunction with indigenous councils (cabildos) a strategic plan in order to strengthen the following key aspects of the lives of the indigenous people of Cauca: their mother tongue, community unity, community autonomy, territory and culture, key aspects contained in the Life Plan of the Indigenous Peoples of the Cauca.*[19]

The *raison d'être* behind the production of content from an indigenous perspective is always to address the imperative of community development and the community's life plan. The existence of a community access center in an Indigenous school makes sense to the extent it is incorporated into a life plan and works to fortify it. The plan should cover all sectors of the community (women, young people, the elderly, and younger children) as well as their different structures (governmental, territorial, productive and educational) and their subsequent communication needs, as in this example:

> For this reason, a radio station was created, to transmit Wayúu knowledge from their beginnings, to how the Wayúu adapted to their desert environment, adapting endemic fruits and other wild foods,- the essences of what the radio station should make known in order to strengthen the Wayúu culture. What?s more, traditional music is produced with the Kasha and exchanges are made with others not doing this. This is valid, it generates income, it is like strengthening what we belong [to] and [what] belongs to us[20].

Thus, the installation of this type of center requires a participatory process that, among other aspects, will determine the community?s communication strategy and the content that is required to meet its life plan.

Recommended reading

- Hamptom, A. A Hitchhiker's Guide to Information Highway UNESCO http://portal.unesco.org/ci/en/files/13982/10736381611Hampton_Discussion_English.pdf/Hampton%2BDiscussion%2BEnglish.pdf
- Yasarekomo: An Indigenous Communication Experience in Bolivia, FAO (2004) http://www.fao.org/docrep/006/y5311s/y5311s00.HTM

?

[19]Taken from a Asociación de Medios Indígenas de Colombia http://www.amcic.info/?q=node/3

[20]*Radio station Appraisals and/or Indigenous Radios: Columbian Communication Ministry* 2009 p.45

?

3.5.3. Best practices

In selecting programmes that represent best practices for this chapter, their contribution in the creation of an enabling environment for content development was taken into account. Even though the specific objective of the programme might not be the formulation of local content but rather the strengthening of Indigenous broadcasters, the way that programme was created and implemented incorporated all the key elements needed for an enabling environment for content development. In addition, the design met other key elements with respect to regulations pointed out in this section.

The *Indigenous Radio Stations Strengthening Plan (2008-2010)* of Colombia's Ministry of Information Technology and Communication derives from the *Indigenous Broadcasters Appraisal* carried out in 2008 in coordination with the Ministry of Culture and the National Indigenous Organization of Colombia (NIOC), which among others, identified the following issues:

- Stations? lack of consistency with the plans of life of their communities.
- Lack of knowledge of, and support for, Indigenous councils and other traditional authorities.
- Weakness in the stations? organizational and administrative structures.
- A lack of local radio production.
- Of 29 stations (26 stations and three Indigenous community broadcasters in Indigenous zones), 20 stations broadcast programs in their native language, three do not broadcast programs in their language, and five belong to communities without their own language.

Based on this analysis, a *Strengthening Plan* was agreed between the NIOC, the Ministry of Communications and the Ministry of Culture. In executing the plan, formative and self-formative processes were put into practice, utilizing the construction and adoption of an Indigenous radio format. The plan also called for regional broadcasters' meetings, strengthening of the Indigenous radio network and formulating Indigenous broadcasting policy guidelines.[21] In the same vein, the *Mochila a la Palabra* programme was produced, whereby samples of radio programs from 24 indigenous radio stations were collected. There was also *radial training* focused on the recovery of Indigenous peoples? folk memories.

As can be observed, this programme incorporated many elements of the key content-generation aspects identified in this module. It arose from an appraisal developed jointly with Indigenous peoples, and it was linked in implementation with Indigenous peoples? institutions. It strengthened the design of the content plan in accordance with community life plans. At the same time, it strengthened their production capacities through direct training, as well as through the exchange of experiences, and it provided a means to share and disseminate content while strengthening the scheduling of local media. These elements can be adapted to a program of content formation in access centers in many Indigenous communities.

It should be noted that various experiences indicate that content formation takes place primarily when the community access centers are associated with other local media, such as a radio or television station, or when there is a content strategy for the strengthening of the community's presence outside

its limits.[22]

?

[21]One of the networks is the Asociación de Medios de Comunicación Indígena de Colombia Red-AMIC, which works with 10 Indigenous radio stations in the Department of Cauca http://www.amcic.info/?q=node/2

[22]See The Evaluation of UNESCO Multimedia http://portal.unesco.org/ci/en/files/22129/11477736959CMC_Evaluation_Final.pdf/CMC%2BEvaluation_Final.pdf

3.5.4. Self-Evaluation

?

Creation of a content development policy framework	Yes	No
A national plan for local content development exists	?	?
The plan includes the whole cycle of local content development	?	?
The plan contains actions for the creation of distribution markets	?	?
The plan contains actions for training of communities in areas related to content production	?	?
The plan contains measures to provide or facilitate the procurement of equipment for content production	?	?
The plan contains actions to make the existing content available among Indigenous people or provides means for the exchange of local content	?	?
The plan provides measures for the protection of traditional knowledge	?	?
The implementation of community access centers anticipates the participatory formation of a plan?for content development	?	?
Participatory formation takes as an input or generates the life plan of the community or its development plan	?	?
The school in which the center is installed has as one of its objectives the use of the center for local content generation	?	?

?

3.6. Capacity-Building

The establishment and strengthening of capacities covers all areas that have been considered in earlier sections, from planning and operation of basic tools, maintenance and installation of networks and equipment, and development of applications, up to advanced research in applications, networks and regulation.

The table below illustrates the roles of various players in national policy and local communities.
?

?

Capacity building area	Community Access centers	Service Providers	Aplications	Research and development

National Policy	Agent	????????? Promotor	????????? Local Service Provider	????????? Promotor ????????? Software Developers ????????? Training Institutions ????????? Other Media	????????? Research Networks ????????? Institutions & Universities ????????? Development Agencies Industry
	Capacities	????????? Participatory Planning & Appraisal ????????? Basic ITC Management? ????????? Basic Equipment & Network Maintenance	????????? Participatory Network Planning ????????? Network & Equipment Installation ????????? Advanced Equipment & Network?Maintenance	????????? Necessity Based Applications Identification ????????? Capacity-Building in Application Management Application Development	????????? Coordination with International Institutions ????????? Systematization of Experiences ????????? Equipment & Network Development in Apt for Remote Areas ????????? Regulation & Policy Development

Community	Agent	?⁇⁇⁇⁇⁇⁇⁇ Community ?⁇⁇⁇⁇⁇⁇⁇ Community Center Committee ?	?⁇⁇⁇⁇⁇⁇⁇ Community Groups ?⁇⁇⁇⁇⁇⁇⁇ Community Center Committes	?⁇⁇⁇⁇⁇⁇⁇ Digital Center Networks ?⁇⁇⁇⁇⁇⁇⁇ University Assistance ?⁇⁇⁇⁇⁇⁇⁇ Other Organizations ?⁇⁇⁇⁇⁇⁇⁇ Community Center Committee	?⁇⁇⁇⁇⁇⁇⁇ Organizations ?⁇⁇⁇⁇⁇⁇⁇ International Telecenter Networks ?⁇⁇⁇⁇⁇⁇⁇ International & National University Assistance? ?⁇⁇⁇⁇⁇⁇⁇ National & International Movements
	Capacities	?⁇⁇⁇⁇⁇⁇⁇ Planning & Life Strategy Appraisals ?⁇⁇⁇⁇⁇⁇⁇ Center Administration ?⁇⁇⁇⁇⁇⁇⁇ Basic ITC Management ?⁇⁇⁇⁇⁇⁇⁇ Basic Equipment Maintenance	?⁇⁇⁇⁇⁇⁇⁇ Network Installation ?⁇⁇⁇⁇⁇⁇⁇ Advanced Equipment & Network Maintenance	?⁇⁇⁇⁇⁇⁇⁇ Identification of Applications Base on Community Activities & Necessities ?⁇⁇⁇⁇⁇⁇⁇ Application Management ?⁇⁇⁇⁇⁇⁇⁇ Content Formation ?⁇⁇⁇⁇⁇⁇⁇ Software & e-application Development	?⁇⁇⁇⁇⁇⁇⁇ Network & Team Development ?⁇⁇⁇⁇⁇⁇⁇ Participation in Regulations & Policies ?⁇⁇⁇⁇⁇⁇⁇ Develeopment of National & International Strategies ?⁇⁇⁇⁇⁇⁇⁇ Sistematization of Experiences ?⁇⁇⁇⁇⁇⁇⁇ Action-Investigation ?⁇⁇⁇⁇⁇⁇⁇ Links

3.6.1 Key Elements of Capacity-Building

All of the key elements of capacity-building should be reflected by the people and organizations that execute connection plans in Indigenous regions. In other words, the task of governments is to develop institutional capacities and human resources to strengthen their communities. It is best to achieve this not through direct assistance, but through the strengthening of local resources and the provision of aid to networks that contribute to the development of community access centers.

3.6.1.1 Development of a Comprehensive Plan

Capacity-building cannot put to one side any single aspect of the chain of production and the development of ICTs. In this sense, an integrated development policy includes the capacities necessary for interaction with the community, deployment, supply and maintenance of the service, the development of applications and the development of equipment suitable for the context of this type of communication -- in addition to the policy and regulations that contribute to its provision. In the same way, these capacities, or the links to networks that they have and develop, must be present in the community.

Connectivity plans focus their efforts on creating capacities for the use of ICTs in communities but forget to create the minimum capacity necessary for the installation and maintenance of the network. This creates a huge external dependence and imposes high costs in problem solving that could otherwise be resolved in situ, such as the reconnection of an antenna or the installation of an antivirus program, among others.
?

3.6.1.2 Staff with Skills and Abilities for Intercultural Community Work

The most repeated problem with the installation of ICT access centers in Indigenous communities is that the people involved in strategy and implementation lack experience in community work. So they often propose programmes from the perspective of outsiders. The errors in building access centers

often violate community social structures and come to create real conflicts that ensure the failure of the centers and affect the likelihood of successfully undertaking other collective projects.

The installation of a digital center within an Indigenous community is a political and social event, bringing along with it empowerment that must be appropriately managed, so that it benefits the community as a whole and not just one individual or group. Recent history is replete with many examples of access centers abandoned or destroyed, solely because they lacked a proper participatory process during installation and operation.

In this regard, it is indispensable to set a standard of competency in the training of those responsible for community planning at digital centers, The Philippines does this, representing a best practice for the sustainability of such centers.

3.6.1.3 Self-sustainability Guidance

Capacity-building refers to more than just training. It implies returning to the community its ability to be self-reliant. It involves a way of relating with the community that avoids dependence and strengthens both internal and external community collaboration. In practice, the difference between training-oriented activities and training geared toward the construction of capacities is vast. After a successful training workshop, the participants feel that they have learned. But after a workshop on capacity-building the participants feel they knew a lot, but now know a lot more, and that they are capable of dealing with situations they will confront because they will be able attain the necessary resources to do so.

Self-sustainability guidance above all relies on local human and material resources. It strengthens the relationships within the community and creates new external relationships. It allows the community to manage resources and increases the information and knowledge available.

Capacity-building ranges from the tangible to the intangible. No one single course can be defined as the correct path to capacity-building, because each situation is unique, but the following development can be articulated.

Capacity-building begins with the strengthening of community identity and aspirations. The community recognizes its world -- its myths, values, natural resources and the people themselves. From this point,

the place the digital center will occupy in the community is defined. Community members continue by identifying their ideal situation (their dreams, some would say) and by charting a path to them. At this point, a plan now exists, and the community members know what training they require in order to attain their objectives. They can now start to explore their capacity to associate with others and to obtain the resources in order to acquire the skills they need to employ. The rest is a matter of training and resources, the visible and easiest part. The other key elements will clarify this aspect.
?

3.6.1.4 Always Start with the Organization of a Community Committee

Throughout this section, the various aspects related to participation at every development stage have been highlighted and there is no exception here. Aspects related to capacity-building do not simply come to fruition once the access center is installed, they have to be planned.

Prior to the access center's installation, it is necessary to work with the community to name a committee that will accompany the planning and construction process and that will, by preference, continue the technical assistance work of the center after its opening. The committee must:

- Be formed by people with the natural ability to use technology;
- Be heterogeneous in its age structure and include people with roots in the community and who are committed to it;
- Spread the word to people who can provide technical support to the network in the long term.
- Share responsibilities and obligations among members and, in addition, document procedures in an operations manual for support and guidance.
- Collaborate closely with a local organization that provides support and take its opinion into account with respect to the integration of the team.

Having a committee that participates in all stages of the process allows the community to have personnel that understand the functioning of the network and the center, because they have participated in its planning and construction. This furnishes a foundation on which other abilities can be built, and it also offers a point of reference for the service provider to seek help in diagnosis and repair in case of operational failure.
?

3.6.1.5 Start From a Participative Appraisal

Prior to commencing the operation of the access center, the community will need to review its development aspirations and find the place that the access center will occupy in reaching its objectives.[23] In the appraisal, the different groups within the community must recognize the usefulness of the digital center and define what objectives they hope it will help them meet. That way, training needs can be identified based on their real value.

It is important that participatory appraisals involve all sections of the community -- and above all the most vulnerable, including women, children, marginalized groups or individuals with disabilities. Every community presents a unique set of such groups and individuals. It is sometimes necessary to carry out specific activities for certain groups, such as women, so that they can feel more at ease working separately. It is important to integrate everyone's vision into the access center plan.

[23] The methodological tools with which to do this are varied and with multiple sources such as 80 Tools for Participatory Development: Geilfus F. (1980) http://www.crid.or.cr/digitalizacion/pdf/spa/doc15788/doc15788-a.pdf.
Another specialized text for telecenters in Indigenous communities is the following manual for participatory workshops: ITC Use for Local Development: Community (Medellín 2006).
http://www.slideshare.net/diocesispopayan/manual-taller-participativo-telecentros-1
?

3.6.1.6 Appraisal-Based Training

The appraisal is the basis for prioritizing training needs, but this does not mean that such needs are immutable. New requirements can emerge during the process, but they always must be weighted along with those identified initially.

Moreover, the appraisal provides the basis to measure the impact of the training and assess its results, since it relates to a specific development need. The training is useful only to the extent that the need is satisfied.

Given that we are talking about access centers located in schools in Indigenous communities, it is essential from the outset that the educational results the community will attain are defined, beyond just access to information or computing time for the pupils of the school. The ideal result is for the access center to become a space to create local educational content that contributes to intercultural education in these rural communities.[24]
?

[24]? An example of educational use in this context of ITCs is Quiche Link, an Guatemalan association that generates educational content in the Quiche language http://www.enlacequiche.org/

3.6.1.7 Network Creation

The essential element for the continuous strengthening of community abilities is direct access to media and links that allow for the exchange of experiences, as well as relationship strengthening and technical advice. It is important for the appraisal to identify groups and institutions near the community that can support the capacity-strengthening process and those national or international networks with which the community can be linked.

The generation of national or international encounters for the exchange of experiences is also a good practice with which to strengthen local initiatives.

With respect to this, there are international networks such as the Network Somos@Telecentres http://www.tele-centros.org/paginas/inicio.php and Telecenters.org, http://telecentre-comunidad.ning.com/ operating as a virtual space for the exchange of experiences, training and technical support.
?

3.6.1.8 Preparation to Meet Local Training Plans

It is often thought that capacity-building plans and programmes can be developed into a single structure, or in other words, one unifying programme that can be adopted by every access center. This would take the form of a single curriculum that each access center manager or operator would comply with. In a programme aimed at local capacity-building, however, local training plans will be community-

specific, and the organizational structures, the access centers and national structures for capacity-building must be able to respond to local variations.

To achieve this requires linking communities to institutions and training tools, as well as the availability of online content in appropriate indigenous languages and in diverse themes. At the same time, there must be local networks that allow easy access to training based on community needs. The table presented earlier in this section indicates a scale of networks for capacity-building.

Recommended Reading

The recommended bibliography below covers three fundamental aspects of the formation of an appropriate capacity-building program. The first presents an example of national competencies for managers of access centers. The second contains practical information for training in the development of local networks. Chapters 9 and 10 demonstrate important guidance for the formation of community technical committees and the organization of community centers. There is a useful handbook for the organization of access centers, based on a participatory model that, in turn, is based on a needs appraisal that allows for the conclusion of a training plan. Finally, the third publication serves as the source for the section on best practices of this text.

• National Competency Standards for Community eCenter Knowledge Workers. Telecentre.org-Philipine Community eCenter Academy http://www.itu.int/ITU-D/asp/CMS/ASP-CoE/2010/IRD/S7-Mr_Noel_Mendoza.pdf

• Wireless Networks in Developing Countries Third Edition http://wndw.net/download.html Roesner C. Step by Step Towards a Telecentre: A Template for the Development of a Community Telecentre. Chasquinet Foundatio, 2008. http://www.telecentros.org.co/index.shtml?apc=h1b1--&x=14651

• Yasarekomo: An Indigenous Communication Experience in Bolivia FAO 2004. http://www.fao.org/docrep/006/y5311s/y5311s00.HTM
?

3.6.2 Best Practices

The exemplar for best practices in this section illustrates all the factors inherent in capacity-building that have been cited in this part of the toolkit. This programme began before the popularization of the Internet, but it continues to be an essential point of reference in the field of Indigenous communication.

The Guarani Communication Unit required an ample development process. Its story began with the Evaluation of the Province of the Cordillera de Santa Cruz, Bolivia in 1986, which encompassed several Guarani communities. In this evaluation, the Guarani People's Assembly (APG) adopted a number of development strategies, via dissemination among the various Indigenous leaders. The APG formed an organizational structure, whose projects and programmes were implemented through coordination with public institutions, international agencies and social organizations.

Education was identified by the APG as fundamental for development of an intercultural and bilingual proposal to improve Guarani education and acquire appropriately honed human resources, consistent with their origins and committed to their community. Under this strategy, and with the aim of having a mechanism for the execution and implementation of programs and projects, the Workshop of Education and Communication Guarani (TEKO Guarani) was constituted and began work in coordination with state and international institutions such as UNICEF.

As part of TEKO Guarani, a communication team was instituted, which supported literacy and bilingual education activities through content produced locally and supported by local radio stations that were even able reach other Guarani communities in Paraguay and Argentina.

After very successful work, in 1995 the TEKO Guarani and the FAO Communication for Development in Latin America project signed an agreement that would transform the TEKO Communication Team into the Guarani Communication Unit (UCG). The goal was to generate a communication system that would improve the quality of life of the Guarani people and promote Indigenous development. Three years of planning workshops and training went into building a Guarani people's communication vision. With technical support and international financing cooperation, an intercultural knowledge and information-sharing proposal using video and community radio was defined. The communities continued working independently, producing communications materials and implementing plans aimed at development for another six years.

Motivated by its prior performance, the UCG decided to conduct a self-appraisal of its work. For this reason, help was sought from the APG and other indigenous organizations in Bolivia. For the first time, the Indigenous population independently documented and systematically analyzed the use of the media and communications produced by and for Guarani communities. The results of the self-appraisal confirmed the importance of adopting new media. New goals were defined, such as the need for a national policy that recognizes the right of the Indigenous people to provide and access communication services with funding from local institutions.

Currently, the Guarani Communications Unit continues to promote audiovisual courses in communities, with a pedagogical method developed by the unit?s members themselves that is participatory and focused on the search for solutions to the communities? needs. Additionally, the unit formulates and implements peasant training communication plans that allow them to agree on the priorities, technical information, resources and logistics. They produce materials collectively and optimize the resources available. These plans have also been useful as negotiating tools for projects by local municipalities.

As can be seen, this best practice example began with a planning process that was founded on the community life strategy and adopted communication as a tool with which to support the various development activities considered fundamental. Its progress, then, not only extended to applications and content generation, but also to research and involvement in public policy formation, in order to monitor results. In this example, capacity-building is evident in all aspects.
?

3.6.3 Self-Evaluation

?

Generation of an enabling environment for capacity-building.	Yes	No
A national capacity-building plan exists	?	?
The plan includes actors and institutions involved in access centers, local service provision, applications, and research and development.	?	?
The plan seeks to strengthen capacities for the areas mentioned both at national and community levels.	?	?

Personnel in direct contact with the communities are trained in participatory methods of community development.	?	?
Community level training activities are based on an appraisal exercise or community plan.	?	?
A committee is formed by participants during community consultations regarding access center implementation.	?	?
Groups, organizations or small businesses exist at a local level that can provide maintenance services to the network and the access center.	?	?
The local network is connected to other institutions or groups that allow for the strengthening of access center and community level capacities.	?	?
Connections to international *tele-center* networks are fostered and facilitated.	?	?
National level installations exist for the exchange of community experiences.	?	?
The impact of the programmes, courses and workshops are evaluated against the impact of capacities necessary to achieve the communities? development objectives.	?	?

3.7 Participation

During all the topics covered in this chapter, it has been highlighted that participation is an essential element in all the phases that constitute the generation of an enabling environment for community access centers located in schools. Participation also is needed in all aspects of planning, installation and operational processes. We can say that participation is the axis that links all areas and environments with respect to access centers.[25]

This section contains the central aspect of all the work related to the installation of access centers in Indigenous communities and other remote communities. It also synthesizes participation in every

phase of the process of installation and operation of access centers, all of which are aimed at achieving technological adoption in the community.

When participation at the community level is spoken about here, it refers to something that goes beyond the simple fact that the community is taken into account in the decision-making process. We refer to community adoption of ICT -- that is, the incorporation of such technologies into the life of the community. So the new facility cannot be understood as solely an access center, but as a tool, or a strategy at the service of the community's life plan.

> *"Social Adoption means that the resources of the Internet have helped to solve specific problems with respect to the transformation of the community?s reality. The evidence of adoption is not in the use of the ICT, but the changes that have occurred in the real world. Only when the resources of the Internet are useful tools with which to transform their reality and ITCs reveal their potential to contribute to development... The challenge is to go beyond connectivity, which by itself is insufficient, and include the dimension of equitable access, use with-sagacity and social appropriation of ICTs for development[26]"*

As such, programmes and projects that incorporate ICTs in Indigenous communities should promote and facilitate the adoption process, which is accomplished by encouraging community involvement in all phases of the process, strengthening local capacities and considering the specific contexts in which ICTs are inserted.

?

[25] The principle ideas in this section are taken from an unpublished study carried out in 2006 under the supervision of Sofía Medellín y Diana Marenco entitled: *Considerations about the Community of ITC s and Telecenters*

[26] Internet: What For? www.idrc.ca/pan/pppp in Rabadan, Silvia F and Bassi, Roxana, (2002).

3.7.1 Key elements

There are five key elements of participation. In defining these key elements, only a brief explanation will be given, since the theme of self-evaluation and community input has been explored exhaustively

in defining the questionnaire that guides every aspect of participation and is presented here in a general form.

3.7.1.1 Community Participation in the whole process

Perhaps the most important element -- recognized with increasing frequency as a requirement for tele-center adoption and sustainability -- is community participation in all stages and activities of the project. Speaking of participation, however, can prove a little ambiguous; in any project there exists different levels of beneficiary participation, ranging from the simple acceptance of projects, consultation, shared decision-making, and collaboration, up to the self-management of projects.

It is known that higher levels of community participation contribute greatly to achieving the project's adoption and long-term sustainability. The extent to which the community participates, from their own forms of organization, and defines the most substantive aspects of the project, it will adapt to local conditions. People will involve themselves and make the project their own, contributing significantly to the sustainability of the project.
?

3.7.1.2 Complete Autonomy in the Decision-Making Process

Although decision-making has already been referred to as a possible element of participation, it is important to emphasize this when referring to the acceptance of a project. It is essential that the community be able to make decisions that define the access center's direction and characteristics, including planning, design, operation, resource administration, monitoring and evaluation. In this, it can be ensured that the access center is going to respond to a specific reality and context -- to the needs of the community -- and will adapt to the necessary changes when required.

In addition to encouraging the community to make decisions about its own access center, co-responsibility of those involved in the project is recommended. This must begin with the fundamental decision of whether to introduce the project into the community or not. Information is a key ingredient in the decision-making process, and the community should have full access to it. By the same token, reflection on the decisions taken should be promoted. It is important that, within the community, there is

clarity about the potential impacts of such projects -- both positive and negative -- and that the community can generate its own strategies for dealing with them.

This point is particularly relevant with respect to connecting schools. Connecting a school does not necessarily imply taking it to a community, as indicated in the Module 1 part 4 of Connect a School - Connect a Community. The expansion of Internet service to the community can occur in two ways: (1) the creation of community access centers within schools, or (2) the use of access centers as nodes for the deployment of connectivity to other areas of the community or to other communities.

The creation of such centers at schools, or the use of them as development nodes, requires the definition of protocols that allow a joint administration of the operational space. Many access centers installed in schools designed to provide a service to the community never do so, precisely because during their planning and implementation there was no plan as to how they would accomplish that task.

Schools are spaces normally closed to the community, for obvious reasons of securing the facilities and student safety. Thus, they are not wholly public spaces, and that is why the process of making decisions with regard to the manner in which the school will provide connectivity to the community is impossible to ignore.
?

3.7.1.3 Participation in Capacity-Building

Since this issue has been abundantly addressed in other paragraphs it will not be dwelt upon at this juncture. Nonetheless, community participation in three aspects of capacity-building is essential:

- The selection of training areas in accordance with the community life plan
- The formation of groups or committees that will be empowered in order to tend to tasks related to access centers
- Participation in the strengthening of capacities of other communities and individuals.

The points raised in the preceding paragraph enable us to ensure there is training that is significant for the community and that it occurs in areas where there is real application of work to improve peoples? quality of life. Secondly, it is important to have groups available that are able to tend to access centers'

minimum technological requirements. Finally, the third element facilitates the creation of capacity-building networks and the development of training content in the communities? own languages.

3.7.1.4 Participation with Resources and Capacities

In the process of adoption, and to contribute to the sustainability of the tele-centers, it is recommended that, as much as possible, local resources and capacities be incorporated into the project. Provided it is carried out in a context of real participation and co-responsibility, community input is very important to reinforce the process of project adoption, which along with local capacity-building reduces dependence on outside support.

To achieve this, it is necessary to identify human resources, materials and institutional backing in the planning processes. These resources can be used in the installation and operation of the center and, of course, are usually defined by the community itself.

?

3.7.1.5 Cultural Relevance

As has been mentioned, each ICT project is introduced in a particular context that must be taken into account from the moment the project is proposed. Cultural relevance of the project can only be achieved with the participation of the communities where it is inserted. The communities themselves must define the nature and the nuances that the access center is to have, along with the use that it is given, in order to adapt it to the relevant cultural context.

> *To defend our Life Plans, we have gone from the oral tradition to the modern media, without forgetting our principles as Peoples. We take advantage of the new technologies in communication to make ourselves visible and to empower our own media. This strategy stems from the need to make visible and publicize the importance of our culture and at the same time denounce the many abuses suffered by indigenous people of Cauca in every sense of the word. Indigenous National Council of Cauca http://www.cric-colombia.org*

In this sense, it is of the utmost importance that the community's social structures, decision-making bodies and life plans are respected. On one occasion, a group of researchers working at an access

center located at an Indigenous school agreed to produce an Internet portal about the Wixarica people in Mexico. They formed a group composed mainly of Maracames (traditional doctors) from the community. When the portal was completed it was submitted to the community assembly, which banned the portal because the project had never been approved by the community and the group had not been authorized to divulge information about its customs and rituals.

Indigenous communities have decision-making and information handling protocols. Knowing and following these are the first steps towards implementing a successful project.

Further Reading

The recommended literature shows us a program for the development of access centers based on a participatory model and a tele-center community adoption methodology.

• *Toolkit for Setting up Rural Knowledge Telecentres*; M S Swaminathan Research Foundation http://www.mission2007.in/files/toolkit.pdf
• Medellín, S. *Use of ICT for Local Development: Telecenters Community Appropriation* Participatory Workshop Manual Mexico 2006 http://www.slideshare.net/diocesispopayan/manual-taller-participativo-telecentros-1
?

3.7.2 Best Practice

The best practice found with respect to this topic could undoubtedly also fit several other aspects of this module. Here we refer to Mission 2007 of Grameen Gyaan Abhiyan in India http://www.mission2007.in/ .

The Grameen Gyaan Abhiyan is a rural social knowledge movement that seeks to empower 637,000 villages through a team of multiple actors. It is based on different ICT development models in India, including community access, entrepreneurship, government, business, cooperative action and various combinations of those models.

This movement was selected as an example of a best practice that stems from the guiding principles on which it is based:

- It is a program that focuses on people and is based on community adoption. Therefore, its operation requires the support of the community as a whole.
- It takes into account local context and the information needs of the people, therefore providing useful services based on demand. Although various types of technology are used and researched, the program does not seek to demonstrate the power of technology. Its usefulness is more important than using the latest technology.
- The program seeks to be inclusive and allows for everybody's participation. Therefore, principles such as social inclusion, gender equity, attention to remote areas and regional inequality solutions are the basis on which to build community centers.

In this program, access centers are operated by community groups that define which of their needs and the objectives can be attained by the use of technology. The access centers are linked with multiple institutions in order to access information and capacity-building.

Participation and, therefore, community access center adoption, is the backbone of this process, along with collaboration and networking, which can be identified as a best practice.
?

3.7.3 Self-evaluation

As mentioned at the beginning of this section, the self-evaluation elements of participation will be more extensive, and unlike those in other sections, there will be one table for each area of participation.

?

Participation in the Planning. Who plans? ?	**Yes**	**No**
The community is consulted. ?	?	?
The community can decide whether to carry out the project or not.	?	?
The project involves members of the community who have the endorsement of the community.	?	?

The structures and forms of community organization are considered.	?	?
It is a result of a local initiative.	?	?
It stems from a need for information and community communication identified by the community.	?	?
The planning is carried to the interior of the community.	?	?

?

Participation in the Planning. How to plan?	**Yes**	**No**
Knowledge of the local context is obtained from a participatory appraisal.	?	?
The community takes decisions in the planning of the project.	?	?
The planning process tries to strengthen local capacities.	?	?

?

Participation in the Planning. What aspects are planned with the community?	**Yes**	**No**
Installation.	?	?
Capacity-building.	?	?
Needs for information and content production.	?	?
Administration and operation of the access center and of the services it will provide.	?	?
Assessment is planned with the community	?	?

?

?

Participation in the operation of the Access Center	**Yes**	**No**
The members of the community are involved in the administration of the center.	?	?
The members of the community participate in the operation of the center.	?	?
The members of the community are involved in monitoring, maintenance and failure reporting.	?	?
The members of the community that involve themselves in these aspects have?community support.	?	?

?

Participation in the use of the Access Center	**Yes**	**No**
Uses are defined by the community according to a participatory appraisal.	?	?
All sectors of the community, in particular the most vulnerable ones, are considered and participate in the definition of uses.	?	?

?

Participation in Sustainability	Yes	No
The community defines the sustainability strategies.	?	?
Members of the community are involved in various aspects of the operation of the access center.	?	?
The community contributes directly, in cash or in kind, to the sustainability of the access center.	?	?
There is a long-term sustainability plan.	?	?
The community or its delegates participate directly in networks that contribute to its sustainability.	?	?
Local resources are used when possible.	?	?

?

Participation in the Evaluation	Yes	No
The community evaluates.	?	?
The community defines indicators.	?	?
The community is the main target group of the evaluation.	?	?
The community can make decisions with regard to the access center, as a result of previous evaluation.	?	?

?

Participation in the Strengthening of Capabilities	Yes	No
The community defines its training needs from an appraisal	?	?
The community participates in training networks	?	?
The community produces its own training tools	?	?
The community produces educational content	?	?

?

Cultural Adoption of the project	Yes	No
The community integrates the project into its life plan	?	?
The project respects the social structures and values of the community	?	?
The project can be adapted to cultural characteristics	?	?

4. What is the Role of Indigenous Peoples in the Installation and Operation of Access Centres Located in Schools in their Communities?

Just as the government of each country must carry out certain actions to ensure the development of the ICTs in Indigenous communities, the communities themselves have at their disposal several actions for ensuring that ICT projects placed in their communities are sustainable and contribute to their development.

Although the national strategies for developing ICTs in Indigenous communities are a very important contribution, the role of the communities themselves is essential. There are many examples across the world where communities have managed to establish sustainable projects in spite of political indifference towards the development of ICTs. Through networking and organization, grass-roots projects have often managed to transform national politics.

This chapter will talk about the basic steps that an Indigenous community, or a community located in an isolated region, can carry out in order to achieve the conditions for sustainability of an ICT project and the use of ICTs for development.

The path winds from from local to global, and it passes through the basic steps of every community project. Yet this time it is focused on ICTs, specifically in access centres located in schools, or connectivity in schools for deployment in the community.

The importance of Indigenous community participation is covered elsewhere in this module. This section traces the path to be followed by a community that wants to ensure a successful process of community adoption of ICTs and wants to contribute to the creation of an enabling environment of ICTs for Indigenous peoples at a national level.

According to the way in which we have designed it, this path has the following stages:

1. Discovering: The project has to find its place in the core of the community life plan. This stage is the equivalent to the birth of the soul of the project; it is what will keep it alive in the life space of the community.

2. Organizing: The project needs to find the people and the community spaces that will help it to develop. This stage is similar to the birth of the body of the project -- it arms and legs, with which it will be able to start moving.
3. Defining: The project must be clearly defined and based on a plan of execution. To continue with the analogy, this stage is the creation of the mind of the project.
4. Connecting: In this stage, the project has to find other, similar projects that it can align itself with. The best way is to start by looking for the closest ones and then to join forces with them. During this stage, the project is already complete -- it has a soul, a body and a mind -- but one can never be a full person without friends, thus this is the right moment to look for them and become part of a new group.
5. Networking: The project organizers will notice that there are many more projects like it, sharing a lot in common, and that together they can achieve the changes they are looking for. At this point, the project embarks on a journey to know the world. It is connected to the ground where it was born and it participates with other projects in activities that generate common benefits for all those who are like it.
6. Telling and reflecting about its story: The project has a full existence. It is now growing, and it needs to see the path it is taking and the way it is growing.

As with any other path, the road to a successful ICT project is one that can be started at different points. Sometimes we start in the middle, and this is fine, as long as we pass through all the stages. Experience shows us that the boundaries between the stages change all the time and that some stages may even take place simultaneously.

We will follow the path as we have described it here. We will do it using case studies of processes followed by Indigenous communities, and, last but not least, we will provide a couple of questions that can help verify if any given community is following such steps in its own process.
?

4.1 Discovering

It is common for Indigenous peoples to reflect about life and to comprehend the role that their community has in it. It is through songs, tales and stories, knitting, crafts, legends, dances, and rituals

that the new members get to know about the history of the community, so they can think about it and understand their reality.

All these activities, as well as the assemblies, the *tequios*,[27] the *mingas*,[28] are the processes on which the community builds, remembers and updates its life plan.

> *"From our perspective, we build communication from our own ways. There are many sorts of ways of communicating, such as knitting - that is communication - the mingas- that is communication - and through many other of our communication experiences[29]."*

Therefore, the access center is a new instrument for communicating such a life plan and for helping these ways of communicating to achieve their objective. Thus, the decision to start a communication project, in this case a communication center in a school, cannot be unconnected from the life plan of the community, since it is within this plan that the project justifies its existence and finds its objectives.

> *"In order to defend our Life Plans, we have gone from oral tradition to communication media, not forgetting our principles as peoples. We take advantage of the new communication technologies for making ourselves visible, empowering our own communication means. This strategy comes from the need for noticing and communicating the importance of our culture and, at the same time, condemning in all manners the abuses committed against the Indigenous Peoples of Cauca."*

Gathering in an assembly, a *minga* or any community event is an essential step that cannot be omitted in the process of determining why to create an access center and what role it will play in the community.
?

[27] Translator's Note: A *tequio* is an organized way of working in which the members of the community must contribute with materials or manpower in order to build a communal building.
[28] Translator's Note: A *minga* is a traditional form of communal or social work with social objectives, which can also be performed for the benefit of one person or family, and in which there is always a benefit for the participants. It is mainly practiced in Peru, Ecuador, Bolivia and Chile.
[29] Diagnostico de Emisoras y/o Radios Indígenas. Ministry of Communications of Colombia. 2009. pp 44.
?

4.1.1 Case Study (Regional Indigenous Council of Cauca)

The Nasa people are located in the Cauca region in Colombia. [30] They consider the practice of their life plan as a right. The concepts of unity, culture and autonomy are articulated in the plan for the benefit of the members of the Nasa people and their environment.

> *"We have clarified that we also have a political choice in this world, that we also think, that we also have a philosophy […] This right is so real that, even though they have not wanted to accept it, they have not been able to ignore it either. Our territory, our resources and the possibility of managing our own development according to our way of thinking, and not according to the values of a system that they want to impose on us, are a fundamental part of the rights for which we keep fighting[31]."*

Keeping this in mind and very present in their life plan, the Nasa, with the aid of the Regional Indigenous Council of Cauca, started to write down its life plan at a time when the government also started to demand development plans for the region. When making their life plan, the Nasa kept in mind the perspective of women on how the plan should be created in order for it to be inclusive and harmonious. They used the analogy of knitting:

- *"The beautiful and harmonious unity of the many stitches integrating the final product of the knitting."*
- *The balanced encounter among colours, figures and different stitches as a whole.*
- *The result: the knitting as the product of different proposals, objectives and ways of working and methodologies. Different, yet oriented towards the same goal.*
- *Knitting with different ends and uses according to particular communitarian needs.*

All the areas that must be assessed were pointed out inside this plan, among which were education, language and communication:

- *That the language recovers itself in all its spheres: comprehension, speaking, writing. It must be promoted at a local and a regional level and used in the communication and expression of media, in which young as well as elder people participate.*

- *To confirm the educational project corresponding to the Indigenous cabildos[32] of Cauca. To unify an education proposal that allows projecting and coordinating activities among the different councils and their educational institutions.*
- *To create our own communication strategies, taking advantage of the technology and the professional capacities of some Indigenous people. Some communication means have been implemented that respond to our language, uses and customs. The Indigenous radio, websites, newspapers, magazines and audiovisual materials are particular cases. The objective is to find exposure through means of communication controlled by indigenous peoples.*

In order to address such issues, one of the actions taken by the Nasa people was to create the Communication Program of the Regional Indigenous Council of Cauca, which pointed out the following principles for the media that will belong to this program:

- *Informing: To have the capacity to focus the attention of the community on the activities that the national, regional and local organisations and the different social sectors perform on matters of social interest in which they are involved, contributing with elements for analysis which promote and facilitate people's comprehension of their reality and create a public opinion.*
- *Educating: To develop a direct and bilateral communication, optimizing the broadcasting and reception capacity of the indigenous peoples in Cauca. We want to enable the knowledge and analysis of the reasons which lead to the existence of this social reality, to create conciliation spaces, to facilitate bringing out and putting in common different points of view.*
- *Mobilizing: To create awareness about the social reality of Indigenous peoples of Cauca, having an effect that makes Indigenous people and social actors move towards the execution of ideas, proposals and projects for achieving a peaceful coexistence, to recover trust and strength culturally, socially, politically and organizationally.*

This is the story about the way in which the Nasa inhabitants designed their communication project. The objectives and the role that the media plays in the community are well traced, the corresponding ideas are clear, and there is a commitment from all of the members of the community to undertake them. We could say that the Nasa successfully covered the first stage of the path.
?

[30] All of the notes that we mention in this chapter are mainly taken from Otero, José. *El derecho a la comunicación en el Plan de Vida de los Pueblos Indígenas del Cauca.* Colombia. 2008.

[31] Quote from a speech given by Lorenzo Muelas, taken from Otero, José. *El derecho a la comunicación en el Plan de Vida de los Pueblos Indígenas del Cauca*. Colombia. 2008.

[32] Translator's Note: A *cabildo* is the equivalent to a town hall or council.

?

4.1.2 Are we heading in the right direction?

If you are starting a project to connect a school in your community, or if you have already started one, it would be good to apply the following questions in order to know if you have successfully covered all the required steps.

- Was the project discussed in the assembly?
- Is the life or the development plan of the community clear?
- Is the role and function of the project in the life plan of the community clear?
- Is it clear what other areas of the life plan the project is related to?
- Could it be said that the role of the project in the life plan of the community has been found?

?

4.2 Organizing

We know very well that no matter how good an idea for a project is, it cannot be done alone. There must always be someone who develops it, someone who takes specific responsibilities. In other words, we need to appoint the people who will be coordinating the project. The communities know very well how to choose such people. They know their talents and they also know their defects. The community leaders know how to create a balanced committee integrated with all of the people who should and who want to be there.

The following elements should be taken into account when selecting the committee that will be in charge of the connectivity project:

a) Continuity: The project will take some time for installation and development, so it is better to have people with roots in the community, who will not leave any time soon.

b) Ability: Within the community, one can find people who have previous experience with ICTs or who can understand the subject more easily, such as children and young people.

c) Inclusion: It is important that those who are in an area related to the project participate in the committee so that everyone's vision is included and the project can be more easily implemented. The presence of women in the committee is also important, since they will be an important part of the users and managers and they generally have specific activities and projects in the community.

d) Alternation: Many communities have found alternation to be an excellent way of avoiding the concentration of knowledge and experience in just a few people. After a certain period, people switch roles, so that others can learn their skills. As a result, the operation of the project is never at risk because of the absence of one of the members of the committee.

Generally, the committees are created in an assembly so that the elected persons respond to such authority.

Once the people have been chosen, they need a place to work. At this point it is necessary to establish (though it can be changed later on) one or more places where the project is going to be installed. It is convenient to have several options since, throughout the project, the characteristics that the place should have will be revealed. Sometimes the signal is better in some places than in others, or the people have an easier access to one place than to others. These are important factors to consider in locating the access center.

It is very important that all of the agreements mentioned above, and those that continue to be created along the way, are formalized in writing, so that they are available when they need to be reviewed.

?

4.2.1 Best practice

In Mexico, there is a community called La Mixtequita, composed of Mixtec Indigenous people who were relocated there. A community access center was installed there in a school. Unfortunately, the center saw no use, because the director of the school was afraid that the computers would break down.

Encouraged by a promoter, representatives of the community gathered in the school to discuss the access center. The community members included farmers, a representative from the stockbreeders association, a group of women, youth from the public high school, children, the principal of the primary school, and the school committee, among others.

At the beginning of the discussion, the director pointed out why she had not allowed the use of the access center: “We are too few to manage the center, the equipment is very expensive and there is no one who knows how to operate it, so we are afraid that they will break it and there is no computer teacher.”

The others agreed with the director, but they also noted that in the community they had a high school in technology, which actually taught computer sciences. The only problem was that the high school did not have access to the Internet. Thus, the community decided to appoint a committee, composed of the members of the committee of the school, the high school students and representatives of other groups who would be in charge of labours at the digital center. Immediately after they were appointed, they started their training and the center started to run.

In this example, the installation of the center happened without even having a committee to run it. The connectivity had been installed in the school, when maybe another place would have been better suited for it.

As mentioned at the beginning, all the steps in the process must always be taken. Otherwise, at some point the project will have to go back to them. If la Mixtequita had had a planning process in which the community appointed the committee and determined the best place for the location of the access center, they might have avoided keeping the center closed for a year.
?

4.2.2 Are we heading in the right direction?

These are some of the questions that you can ask yourself to verify if you have correctly selected the committee for the installation and operation of the access center.

- Is there a committee for the connectivity installation?
- Is the committee composed of people with roots in the community?
- Are there women in the committee?
- Are there youngsters, children or people involved who have the ability to work with ICTs?
- Is there a scheme in place for alternating the roles of the people in the committee or for including new members?
- Are the agreements in writing?
- Are there options for places where the connectivity or the access center can be installed?

?

4.3 Defining

The project already has staked out the objectives to be achieved, it has a committee that will be in charge of turning the project into a reality, yet there are many things that are not clear yet, such as:

- Infrastructure and sustainability issues -- How is the center going to be operated, how much does the equipment cost, what has to be done first and which are the required activities?
- Issues about the tasks and services that the center should provide -- What are the ways or means of communication that can be reinforced with the access center, and what current community projects can the access center support?

To answer these and other questions that clearly define our project, it is necessary to address the following:

a) What are the alternatives? We know that we want an access center, but maybe we have never seen one -- or maybe we have, but we do not know how it works. Hence, in this first stage it is good to identify other experiences from communities who already have a center, to visit them and to ask questions such as: How do you connect to the network? Who is providing you the

service? What are the requirements? How did you finance it? Where is the antenna installed and to how many people can it provide service? How much does it cost? Does it require particular care and maintenance? What are you using it for? Who supported you? Who trained you? And any other question that comes to your mind.

b) What do we have and what are we missing? With the knowledge of previous experience, we will be able to have a clear idea of what we need for our project. We will be able to order these needs in groups so it is easier to address and identify them. One possible classification could be the following:

- *Connectivity Needs*: All those related to the communication service, such as supplier or type of connectivity (Wi-Fi, Wi-Max, Satellite, Telephone, etc.)
- *Equipment Needs*: All those related to the equipment in the access center, such as computers, printers, cameras and all the other equipment required, depending on the use assigned to the access centre.
- *Training Needs*: All those related to the training that allows us to operate all of the aspects of the access center. Maybe not all of them can be attended to right away, but it is important that we keep them in mind so that little by little, we advance towards self-sustainability.

c) What are the available media in the community and how will the access center reinforce them? At this point it is necessary to identify the communication media that already exist in the community (radio stations, local newspapers, posters). Organizers can consider how the access center could contribute to their enhancement, or in the case of telephony, how it could make telephone calls cheaper. For example, the center can contribute by establishing the radio station online, uploading the local newspaper, designing posters, etc.

d) What are the projects or services taking place in the community and how can the access center support them? In other words, what are the information and communication needs of each of these projects and how can the access center address them. For example, there could be tele-consultation in the medical unit, creation of education courses in the school, investigation of market prices of the goods produced in the community, etc.

e) What training needs does the community have? Items c) and d) provide relevant information for defining the areas that need strengthened capacities. As previously highlighted, one must identify all the required abilities so that the center can become self-sustainable.

f) How will the centre be managed in order to be self-sustainable? Keep in mind what will be the operational costs of the center once it has been installed, how they will be covered and where the ongoing resources necessary for sustainability will be obtained.

g) Who can support the center? In order to perform all these tasks regularly, the center's operators will need external support, which might be technical, financial or training-related. The first place to look is at home, within the community itself. Perhaps the community can create a savings fund or give in-kind contributions. For example, many of the telecommunications cooperatives in Argentina were born in this way. Later on, organizers must look for the relationships linking the community to others in the area so that they are easily connected. Last but not least, organizers must identify the national and international networks or agencies that can support the center.

The plan is ready. Now it is time to take the first steps towards its fulfilment.

?

4.3.1 Best practice (The Guarani Communication Unit)

The story we are about to present goes beyond the planning of the initial requirements of an access center. It speaks to the establishment of communications strategies that can be executed through an access center or other means of communication in the community.

The Guarani Communication Unit[33] in Bolivia had in place a capacity- building process that allowed it to undertake communication plans and to use audiovisual teaching. Right from the beginning, the functions were mainly focused on a capability-training model.

With these tools, the Guarani Communication Unit identified the information and communication needs through a participatory process with the communities and groups. The methodology followed for this project identified traditional and local communication networks, linking points between them and the official technical services, and the needs for knowledge and training.

This diagnostic scheme allowed the detection of losses of traditional medicine knowledge in four communities. So traditional medicine men, community authorities and members of the community got involved in improving knowledge exchange and strengthening community control of the subject. On the

other hand, among the issues that were identified by the community as a priority in its agricultural plans were activities for the production of materials and training courses.

As we can observe, the participatory appraisal process followed by the Guarani Communication Unit produced communication strategies to address specific needs, which were to be executed by the Unit but also by the members of the community and other stakeholders.

We chose an experience that focused on the establishment of communication strategies, since it is the base that will allow us to plan many of the elements required by our access center. For example, if the community has a radio station and wants to find audio content on the Internet, or to post a “podcast” on the Internet, the equipment, the connectivity and the capability training will be focused on those areas.
?

[33] The example was taken from *Yasarekomo. Una experiencia de Comunicación Indígena en Bolivia*. FAO. 2004. http://www.fao.org/docrep/006/y5311s/y5311s00.htm

4.3.2 Are we heading in the right direction?

- Were there visits to other access centers or communication projects before the planning or was there a review of any material related to such topics?
- Do organizers have a basic idea of the ICTs and their possible uses?
- Is there a plan in which all the groups of the community had inputs in drafting?
- Do organizers have a clear idea about the communication means existing in the community and what its communication needs are?
- Is there an idea about the technical and material requirements for the operation of the access center?
- Is there a clear idea about the operation costs of the center?
- Is there a clear idea of the actions to be taken for its sustainability?
- Has anyone composed a list of the institutions and individuals that will be asked to support the different areas identified during the planning?
- Is there a committee responsible for implementing the plan, as well as timetables and actions identified for each task?
  ?

4.4 Connecting

At this point, the project already has a plan. It has defined its needs and has established its priorities. There is a list of the people who can help to attain those requirements, and a list of what kind of aid is needed.

The best approach is to start with the simplest issue and with the resources at hand. Maybe there is another community or a school or a university nearby that can help with technical matters. Maybe there is a government program, or maybe there are groups of migrants who are interested in helping or providing guidance.

When beginning to look for help, many possibilities may arise for working with another organization or institution. The advantage of having a plan is that it dictates what things are acceptable and what things are not. Without a working plan, many communities tend to accept projects as they come, without considering whether they might bring problems rather than benefits. The community may be forced to dedicate time and effort to something that it may not need or is not in its interest.

Another important issue when asking for support is never to allow the people providing it to perform the activities in place of the community or the committee. If the aid means undertaking a task, it is necessary to do it together in order to acquire experience and independence. For example, if someone provides connectivity, the community will work with them in installing the service but should insist that this kind of support include training.

It is very important for the community to have the power to decide in all matters related to the access center. So it is necessary to stay involved in its operation and to have well-trained personnel and committee members.
?

4.4.1 Best practice (The School Shelter of Chemax)

In Chemax, Yucatán, Mexico, there is an Indigenous shelter with a radio station operated by children from the shelter. They have a new digital center and the directors of the shelter are worried because

they think that the computers and the Internet are yet another administrative problem. “Who is going to train us?” they ask. “Who will maintain those things?”

The shelter decided to undertake participatory planning about the access center that had been installed. In this exercise, many uses of the Internet were identified -- mainly those related to the supply of programming content for the radio and for climate monitoring of hurricanes, which are frequent in that area.

During the planning, there was also an evident need for a website for the radio station. Discussion centered on the question of who could train the local residents to build and maintain the website. The facilitator of the meeting asked, “Don’t you know anyone who can help you? A university? A technological institute?” The director of the radio station in the area responded that, in fact, he knew people in a technological institute nearby. A few months later, the radio station had its own website, designed by the institute, which also provided the server. The result is this website: http://www.cdi.gob.mx/mayadigital/chemax.html

The shelter knew how to take advantage of the relationships that it had identified at a local and institutional level to achieve its objectives.
?

4.4.2 Are we heading in the right direction?

- Have the partners, institutions and organizations been identified that can provide help?
- Is there a clear idea of the kind of aid that is needed and what kind of support is not acceptable?
- Is the aid received strengthening capacities or is it making the center dependent?
- What power for decision-making does the community have over the project?

?

4.5 Networking

All around the world, many Indigenous communities are working on access centers or other means of communication. They have problems in common, and they have multiple ideas and experiences for

solving them. Many of them are part of networks that share information. Similarly, there are national networks that share and spread information through an organized work programme, and they also want to have an effect on the creation of a national policy favouring the development of Indigenous communication.

Network participation is the broadest stage in the development of an access center, since it connects a local community with its country or with the world. But network participation is useful only while it benefits the community; global issues make sense when they are related to local ones.

The construction of networks happens at all levels. It is necessary to start at the community, in the social network composed of the users of the access center. Those users will realize that they belong to many networks. When possible, organizers should contact the other access centers in their area, but even more important is to contact the communication centers that can broaden the scope of their communication work. Identify what is being done at a national level, both in relation to schools, and to access centers and tele-centers, and look for an international network. There are many national and regional networks, and at least one global one, to belong to. Above all, identify other Indigenous communities inside these networks.

Europe: http://www.telecentre-europe.org/
Asia: http://www.a-ptnetwork.ning.com/
Southern Africa: http://www.satnetwork.org/
America and the Caribbean: http://www.tele-centros.org
Worldwide: http://www.telecentre.org

Apart from networks in digital centers, Indigenous peoples have established a worldwide movement on Indigenous communication, into which they incorporate the access centers in different ways. This mainly involves applications and content that complete the work of other media such as radio, and in performing communication activities related to the recognition of Indigenous rights. For that reason, the networks of access centers in Indigenous communities cannot be limited only to participation in networks of tele-centres. Their place is also in the Indigenous media movement and in the movement for recognition of the rights of Indigenous peoples worldwide.
?

4.5.1 Best practice (Asodigua Telecenter)

The Asodigua Telecentre is located in Sololá, Guatemala, a rural municipality with *Cachiquel*, *Quiche* and *Tzutuhil* people. The tele-center is a major presence in the area. It trains many Indigenous communities, and has projects that support craftswomen in the use of e-mail and the creation of websites. It also supports educational processes both for Indigenous children and for the local authorities. It provides services to human rights activists, and it has a special program in place for Indigenous women.

The tele-center plays a very important social role in the community, and it has a strong network at a local level. This organizational capacity was illustrated well during the rescue and reconstruction efforts following the tragedy caused by hurricane Stan in 2005.

Having such a solid base at a local level, Asodigua is part of the network called *Somos Telecentros*. As evident in its website, Somos Telecentros has allowed access to many experiences, strengthening the Indigenous peoples' abilities, including their capacity to assist themselves mutually in matters that go way beyond technological labours. Asodigua is a clear example of the advantages of belonging to a global network of tele-centers.
http://arpapallo.net/Asodigua/index.php?pagina=1

Yet, beyond networks of tele-centers, there are more comprehensive Indigenous communication networks. This section already has mentioned the Indigenous Regional Council of Cauca as a network that has been able to expand to all areas -- to such an extent that at the time of writing this document it is one of the main organizers of the Continental Indigenous Communication Summit. It is without doubt an example of a sustained network, with a solid base, that has been able to organize itself by reflecting on its local requirements and addressing them in the international environment.
?

4.5.2 Are we heading in the right direction?

- Is the local network consolidated?
- Are the majority of groups who operate in the community participating in the local network?
- Are there concrete expectations from a national and a global network?

- What contribution can the digital center make to a national or global network?
- What global actions can directly or indirectly influence local actions?

?

4.6 Telling and reflecting the local story

Jen Pöj is an *Ayuc* Indigenous radio station in Mexico. Each year it arranges a big anniversary party for all of its listeners, their friends from the networks to which they belong, the projects in which they participate, and the town, which brims with colour and overflows with festivities and cultural activities on that day. But along with the party there is a collective reflection. The Ayuc celebrate, but they also think about their radio station and about Indigenous radio in general. They listen to the experiences from other guests and contemplate whether they are walking in the path that the community has traced for them and for itself.

This is just an example of a community-based media outlet that reviews, observes and critiques itself according to the life plan of the people it serves. This is an essential part of an Indigenous access center.

Suggested reading

• Figueroa, E. *Consejos y Recomendaciones para Montar Telecentros Comunitarios*. Infocauca.2003 http://webapp.ciat.cgiar.org/es/descargar/pdf/guia_montaje_telecentro.pdf

• Medellín, S. *Uso de las TIC para el Desarrollo Local: Apropiación Comunitaria de Telecentros* Manual de Taller Participativo. México. 2006 http://www.slideshare.net/diocesispopayan/manual-taller-participativo-telecentros-1

?

5 What have we learned?

As we have seen throughout this module, the use of ICTs for the development of Indigenous peoples and isolated communities goes way beyond the supply of connectivity to a school. Connectivity is just a link in a long chain of actions required for the ICTs to be used for the benefit of the communities. In this task, the government and the communities have mutual responsibilities that need to be fulfilled so that the ICTs are truly a tool that contributes to development.

5.1 Administration and management

Throughout this module, best practices and mistakes have been highlighted regarding deployment of ICTs in Indigenous communities, either by means of community Internet access centers in schools, or through the deployment of wider connectivity from the connected schools.

We have already given some general guidelines that are necessary to work towards the sustainable development of ICTs in isolated communities, which do not need to be repeated in this section. Nevertheless, it is important to highlight, as a conclusion, that in order to assure the sustainability of the connectivity projects in isolated areas, there must be an integrated strategy that takes into account all of the aspects of an enabling environment, especially the participation of the addressed communities.

The world is full of examples of ICT development strategies whose success is only superficial. They are strategies that flaunt massive deployment of digital centers, but when reviewed under usefulness and sustainability criteria, they are truly a failure.

The steps presented in this module do not guarantee immediate results or growth in connectivity over short periods, but they provide the basis for a long-term, integrated strategy that will result in solid projects, which in turn will allow the development of more ICT projects.

The proposals presented in this module imply initial actions that may not immediately reflect a rise in the indicators of tele-density or community access to ICTs. But once the key steps have been undertaken, they will lead to exponential growth in connectivity and in applications, as demonstrated by some of the examples presented.

The administrations that choose a sustainable ICT development strategy in isolated communities will surely consider the contributions presented herein as useful.

?

5.2 Indigenous Communities

Those who have lived in Indigenous communities, or in communities where resources are scarce, have learned that the organized work of the community is the essential engine for the success or failure of projects. We know very well that, beyond the supply of economic resources, the most important feature is the organization of members of the community in the effective use of local resources, which apart from the available material resources, include their abilities and relationships with other people, communities and institutions.

Throughout this module, we have pointed out several essential elements that the communities must take into account when developing ICT projects in such a way that they assure their sustainability and applicability to the development objectives of the community.

In order to achieve ICT projects that match the development objectives of the communities, they need to carry out intense reflection and organizational work that can prompt the necessary actions to be performed in the communities. Thus, as we have already pointed out, it is an essential objective for the governments to open spaces for participation in all of the aspects related to the development of ICTs in isolated and Indigenous communities. But we also show that the communities themselves need to be prepared and organized to participate and assume the authority to make decisions inherent to their development.
?

5.3 Tailor-Made Solutions

Throughout this section, we have been able to see the complexity of the actions in ICT development matters, as well as the importance of the social, economic, geographical, political and cultural characteristics of the location, which have to be taken into account in the design of the connectivity policies in isolated and Indigenous areas.

For this reason, under no circumstance can one recommend a model to be imported either from one country to another, or from one community to another. The design of strategies and policies must start with local and national realities, following the recommendations pointed out for the creation of an enabling environment.

Under no circumstance do we consider the recommendations presented as the finished item. It is possible that administrations and communities will find new aspects that must be considered. Thus, the Connect a School-Connect a Community platform is open to the incorporation of their experiences and recommendations, which will allow the continuous improvement of ICT development in rural and Indigenous areas.

Credits

The Module on Community ICT Centres for Indigenous Peoples was drafted by Mr. Erick Huerta Velázquez, Joint General Coordinator of “Redes por la Diversidad, Equidad y Sustentabilidad A.C.” (REDES), Mexico City (www.redesac.org.mx). REDES is an NGO that works on issues related to diversity, equity and sustainability, including “Communication for Development”. Mr. Huerta provides advice to several indigenous communication organizations at the national and international level, as well as to government bodies, to create better conditions for the development of communications in indigenous communities and remote areas.

References

1. Introduction

2. Who are the Indigenous Peoples?

- The Indigenous World 2009 (IWGIA). http://www.iwgia.org/sw617.asp
- The first State of the World's Indigenous Peoples Report.??http://www.un.org/esa/socdev/unpfii/en/sowip.html
- Srinivasan, R. (2006). Indigenous, ethnic and cultural articulations of new media. International Journal of Cultural Studies, 9(4), 497–518
- Indigenous Peoples and the Information Society in Latin America and the Caribean: A Framework for Action, American Connectivity Institute http://lanic.utexas.edu/project/etext/llilas/claspo/workingpapers/indigpeople.pdf?
- Report of the Conference for Thematic Planning for WSIS Tunisia http://www.itu.int/wsis/docs2/thematic/canada/final-report-indigenous.pdf?

3. What is the role of governments in creating an enabling ICT environment for Indigenous Peoples?

3.1 Introduction

- Gómez & Casadiego: Letter to aunt Ofelia http://www.idrc.ca/en/ev-8199-201-1-DO_TOPIC.html
- Gómez, Martinez et alt. Paths Beyond Connectivity http://www.idrc.ca/uploads/user-S/10359897120Paths_Beyond_Connectivity.pdf
- Promoting equitable access, meaningful use and appropriation of the Internet: recommendations for ECOSOC http://www.idrc.ca/es/ev-4300-201-1-DO_TOPIC.html

3.2 Regulation

Huerta, Erick ?Qué significa crear condiciones para que los pueblos indígenas puedan adquirir, administrar y operar medios de comunicación? Jurídica 37, 2007.

3.3 Infrastructure and Technology

- Jhunjhunwala et alt., N-Logue the story of a rural service provider in India http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN023008.pdf
- ?Community Services in the 21st Century: First Nations & Inuit Telehealth Services. National First Nations Telehealth Research Project HTF-NA402 1998 _ 2001
- Mallalieu & Rocke, Selecting Sustainable ICT Solutions for Pro-poor Intervention in Digital Poverty, Latin American and Caribean Perspectives IDRC-2007 http://dirsi.net/sites/default/files/dirsi_07_DP06_en.pdf
- ICT Project and Sustainability Primer: Things to consider when designing ICT projects for low-resource environments. Inveneo http://www.inveneo.org/download/Inveneo_ICT-Sustainability_Primer0809.pdf

3.4 Industry

- Galperin & Girard, Microtelcos in Latin America and the Caribbean, in Poverty Digital, the Prospects in Latin America and the Caribbean IDRC-2007?http://dirsi.net/sites/default/files/dirsi_07_DP05_en.pdf
- Jhunjhunwala, n-Logue: The Story of a Rural Service Provider in India. Journal of Community Informatics (2004) V1 issue 1 http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN023008.pdf
- Finquelievich, S. Telecommunications Cooperatives and Social democratization. Telpin a Case Study of Community Organization of the Information Society Magazine of Social Studies Universidad de los Andes (2005) http://redalyc.uaemex.mx/redalyc/pdf/815/81502203.pdf

3.5 Local Content

- Hamptom, A. A Hitchhiker's Guide to Information Highway UNESCO http://portal.unesco.org/ci/en/files/13982/10736381611Hampton_Discussion_English.pdf/Hampton%2BDiscussion%2BEnglish.pdf
- Yasarekomo: Una Experiencia de Comunicación Indígena en Bolivia FAO (2004) http://www.fao.org/docrep/006/y5311s/y5311s00.HTM

3.6. Capacity-Building

- National Competency Standars for Community eCenter Knowledge Workers telecentre.org-Philipine Community eCenter Academy http://www.itu.int/ITU-D/asp/CMS/ASP-CoE/2010/IRD/S7-Mr_Noel_Mendoza.pdf
- Wireless Networks in Developing Countries Third Edition http://wndw.net/download.html
- Roesner C. Paso a Paso Hacia un Telecentro: Un Patrón para el Desarrollo de un Telecentro Comunitario Fundación Chasquinet 2008 http://www.telecentros.org.co/index.shtml?apc=h1b1--&x=14651
- Yasarekomo: Una Experiencia de Comunicación Indígena en Bolivia Fao 2004 http://www.fao.org/docrep/006/y5311s/y5311s00.HTM

3.7 Participation

- Toolkit for Setting up Rural Knowledge Telecentres; M S Swaminathan Research Foundation http://www.mission2007.in/files/toolkit.pdf
- Medellín, S. Uso de las TIC para el Desarrollo Local: Apropiación Comunitaria de Telecentros Manual de Taller Participativo México 2006 http://www.slideshare.net/diocesispopayan/manual-taller-participativo-telecentros-1

4. What is the Role of Indigenous Peoples in the Installation and Operation of Access Centres Located in Schools in their Communities?

- Figueroa, E. Consejos y Recomendaciones para Montar Telecentros Comunitarios Inforcauca 2003?http://webapp.ciat.cgiar.org/es/descargar/pdf/guia_montaje_telecentro.pdf
- Medellín, S. Uso de las TIC para el Desarrollo Local: Apropiación Comunitaria de Telecentros Manual de Taller Participativo México 2006 http://www.slideshare.net/diocesispopayan/manual-taller-participativo-elecentros-1

?

Reference Documents

- A Hitchhiker's Guide to Information Highway
- Consejos y Recomendaciones para Montar Telecentros Comunitarios
- ICT Project and Sustainability Primer: Things to consider when designing ICT projects for low-resource environments
- Indigenous Peoples and the Information Society in Latin America and the Caribean: A Framework for Action
- Map of Indigenous Peoples - Section 2.1.1
- Microtelcos in Latin America and the Caribbean
- N-Logue the story of a rural service provider in India
- National Competency Standards for Community eCenter Knowledge Workers
- Paths Beyond Connectivity
- Report of the Conference for Thematic Planning for WSIS Tunisia
- Selecting Sustainable ICT Solutions for Pro-poor Intervention in Digital Poverty, Latin American and Caribean Perspectives
- State of the World's Indigenous Peoples Report
- Telecommunications Cooperatives and Social democratization. Telpin a Case Study of Community Organization of the Information Society
- Uso de las TIC para el Desarrollo Local: Apropiación Comunitaria de Telecentros: Manual del taller participativo