Information Management Resource Kit

Module on Building Electronic Communities and Networks

UNIT 2. UNDERSTANDING NEEDS AND ASSESSING OPPORTUNITIES

LESSON 5. BARRIERS TO ELECTRONIC NETWORKING

NOTE

Please note that this PDF version does not have the interactive features offered through the IMARK courseware such as exercises with feedback, pop-ups, animations etc.

We recommend that you take the lesson using the interactive courseware environment, and use the PDF version for printing the lesson and to use as a reference after you have completed the course.

Objectives

At the end of this lesson, you will be able to:

- identify the main kinds of barriers that can affect an online community building initiative.

Introduction

In this lesson we will discuss the main barriers you may encounter in your community building process.

Defining your idea: building up your team and identifying goals

Needs assessment: assessing the needs of the potential online community members

Capacity building assessment

Analysing technical, financial, institutional and social barriers

Introduction

The Keper team is carrying out the needs analysis for their online community building project.

During needs assessment, they have noticed some issues that will have a critical influence on project sustainability.

We need to analyse these problems carefully. Let's think about **IF** it's possible to solve them, and **HOW** to do it.

CRITICAL ISSUES

Potential community members don't have enough skills to deal with technical challenges.

Basic national or regional telecommunications infrastructure must be in place for online community building to occur.

The online initiative is subject to different laws that exist in different countries or regions.

Kinds of barriers

Analyzing these critical issues **before** starting planning and implementation is the best thing to do in order to prevent and effectively face problems.

There are different kinds of barriers. For example, how would you classify the critical issues identified by Keper?

CRITICAL ISSUES

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The online initiative is subject to different laws existing in different countries or regions.

Policy barrier

Capacity barrier

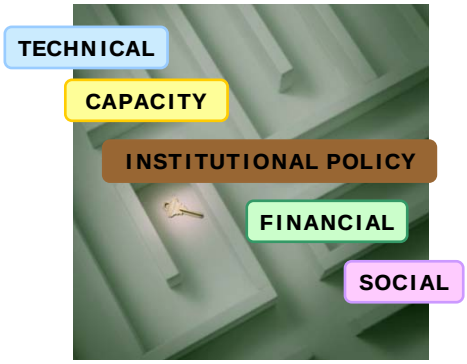
Technical barrier

Click on each option and drag it in the corresponding box.
When you have finished, click on the Confirm button.

Kinds of barriers

There are different possible barriers you may face when implementing an online community project.

They can be of the following types:



In this lesson you will be introduced to these barriers and provided with assessment questions that will help you analyse them by yourself.

Technical barriers

Let's have a look at the following examples. Read them by focusing on the **technical problems** they have faced.

Internet Village Motoman

SchoolNet Namibia

Internet Village Motoman

In a remote and rural village in Cambodia located in the Ratanakiri Province - a place without wires for electricity or telephones - a small village of about 800 people has joined the information society by taking part in a development project to connect 13 rural schools to the Internet.

Since the system went into place in September 2003, solar panels have been powering three computers at the new elementary school here in Cambodia's remote northeast corner.

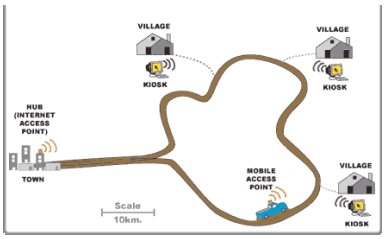


Image Source:
http://www.medialabasia.org/IndexServer/article/content/images/20021112114318_IMG_1.gif

If you want to watch a videoclip on this project you can download it at the following link:
http://www.firstmilesolutions.com/vid/CNN_Global_Challenges_Full_LoRes.wmv
(620KB - requires Windows Media Player)

Once a day, an Internet "Motoman" rides a red motorcycle slowly past the school. On the passenger seat is a gray metal receiver box with a short fat antenna. The system, developed by First Mile Solutions, based in Boston, is powered by the motorcycle's battery.

The box holds a wireless Wi-Fi chip set that allows the exchange of e-mail between the box and computers - transforming this schoolyard of tree stumps and a hand-cranked water well into an Internet hot spot.

The driver need only roll slowly past the school to download all the village's outgoing e-mail and deliver incoming e-mail. Newly collected information is stored for the day in a computer.

At dusk, the motorcycles converge on the provincial capital, Ban Lung, where an advanced school is equipped with a satellite dish, allowing a bulk e-mail exchange with the outside world. See http://www.ratanakiri.com/

SchoolNet Namibia

Image source:
http://www.schoolnet.na/images/student.jpg

SchoolNet Namibia is a nonprofit provider of Internet service, hardware and training to the nation's schools.

In the education sector, more responsibility has been given to students for maintaining the computers.

Many students are equally or more adept with the technology than the “professional” technicians who are often hired.

SchoolNet Namibia works with youth to provide them with the technical training necessary to refurbish, install, and maintain the school’s computer lab.

They spend their time sharing the skills they acquired at SchoolNet Namibia with students in remote areas.

Source: http://www.schoolnet.na/

Technical barriers

Can you identify the kinds of technical problems that were solved in the examples you have read?

Internet Village Motoman	Support to set up computers and install software.
	Transportation and communications.
SchoolNet Namibia	Power source required by computers.

Click on each option and drag it in the corresponding box.
When you have finished, click on the Confirm button.

Technical barriers

You may encounter different kinds of technical barriers. These may include:

The challenges of poor infrastructure and physical access to the Internet

See annex 2.5.1 for a mini-lesson on this subject

Access to appropriate hardware/software tools and ongoing maintenance of those tools to keep them functional

See annex 2.5.2 for a mini-lesson on this subject

Issues related to technical support and sharing a limited number of computers or Internet access points

See annex 2.5.3 for a mini-lesson on this subject

Capacity barriers

Internet access for the rural developing world is widely perceived as a way to reduce isolation and provide opportunities. However, you may encounter some **problems related to the capacity** of your stakeholders to take part in the process.

For example, what kinds of problems are expressed below?

"Many people have never touched a computer!"	Lack of capacity building skills
"We need an Internet café…"	Lack of technology skills
"Who has skills to train people??"	Lack of shared technology resource

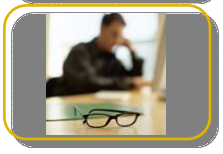
Click on each option and drag it in the corresponding box.
When you have finished, click on the Confirm button.

Capacity barriers

Capacity barriers may include:

Lack of technology core competencies and basic skills

Lack of shared Internet/technology resource



Lack of capacity building skills

Click on each picture to learn more

Capacity barriers

Lack of technology core competencies and basic skills

Many people located in remote/rural resource poor areas have never touched a computer and lack basic skills and comfort levels. In addition, the technical expertise required to keep the network connection and other equipment problem-free has to be cultivated.

Creating awareness, interest, understanding, and acceptance of outcomes of the online community can be difficult and are closely linked with training.

This is why your training initiative is essential to the project's success.

QUESTIONS TO CONSIDER

What types of basic training do online community users need in order to use the shared resource?

Who are the likely community people that we can train as trainers of others?

Capacity barriers

Lack of Shared Internet/Technology Resource

In poor rural settings, sustainable internet services and hardware are delivered as a community or shared, rather than personal, resource.

Shared resources include telecentres, Internet cafés, or information kiosks. In rural/remote areas, villages are typically "wired" in small clusters. Shared resources typically deliver a range of core communication and other services.

The services provided must be based on market research of what people need.

QUESTIONS TO CONSIDER

How will the shared Internet/technology resource be governed as a shared resource by the community?

What other services can the shared community resource provide that meet community needs and motivate local residents to invest time and energy?

Who will install the shared Internet/technology resource? If they are technical experts from outside, how will they train or share networking skills with local people?

Capacity barriers

Lack of Capacity Building Skills

Some of the main areas of capacity building and for the effective functioning of shared resources - such as a telecentres - begin with good business, ICT, employee management, training, and outreach skills.

QUESTIONS TO CONSIDER

How can people and organizations develop their capacity building skills to manage shared Internet/technology resources so they are sustainable?

Who already provides these types of capacity building services?

Of the many important capacity building skills needed, which ones are most important in helping you and those you work with set up and sustain the online community building effort?

Capacity barriers

Outreach, marketing, and interaction with the community are key elements to achieving success of a shared resource: if few people are aware of the resource, or the project is not socially inclusive, success will be unlikely. Your research of audience needs should guide your outreach strategy, how to describe the project, and to whom.

Let's have a look at the following case study, by focusing on how they have handled capacity barriers.

CASE STUDY

Rural Internet Access in the Dominican Republic

See interactive lesson to read the case study

Capacity barriers

In the example of rural Internet access in the Dominican Republic, what strategies were used to address capacity barriers ?

CASE STUDY

Rural Internet Access in the Dominican Republic

Write your answer in the box

Click on the image to review the example

Compare your answer to this

Institutional policy barriers

There are three general areas of **ICT policy** usually adopted or proposed by a government, business or organization:

- Telecommunication (telephone)
- Broadcasting (Radio/TV)
- Internet/E-commerce

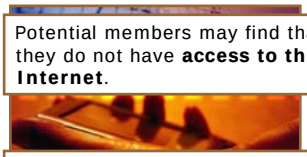
The area of ICT policy that may affect your online community most will be **your country's universal access policy**. Such a policy ensures affordable access to telephones, Internet and other media.

While national policies differ from country to country, universal access includes policies, laws, and regulations related to the use of broadband, cell phones, wireless connections, and other connectivity tools as well as infrastructure monopolies.

Institutional policy barriers

Policies could have a strong impact on the online community.

For example…



Potential members may find that they do not have **access to the Internet**.

→ This may require that a portion of your online community building effort will require additional resources to **increase access** to the Internet for those stakeholders.

Those who do have Internet access may be limited in their ability to go online due to **slow connectivity**.

→ You might need to use **lower bandwidth tools** like e-mail as opposed to web based tools that take time to load.

The reality is that rural and agricultural organizations are **often absent from the national policy dialogues** that help create and shape positive universal access policy change.

As a consequence, universal access policies, programs and regulatory reform initiatives risk neglecting the needs of the very people the initiatives are meant to serve.

Institutional policy barriers

Rural and remote stakeholders must be **actively involved** in shaping and monitoring national telecommunications policy and regulation.

You first need to develop an understanding of the issue(s), so you are aware of any potential barriers to your online community planning and implementation.

Then, you should identify the players that can help you orient online community projects and lead them to effectively and collectively engage with you in dialogue around telecommunications policy reform.

Institutional policy barriers

Develop an Understanding of ICT Policy Issues

QUESTIONS TO CONSIDER

- What is the pricing structure for telecommunications services and equipment?
- To what extent is this a barrier to access for rural/remote stakeholders?
- Is there a universal access policy in place? Are its provisions sufficient?
- Is access for rural stakeholders specifically recognized in the policy?
- What regulatory arrangements are in place? Are they sufficient?
- Are there policies in place to reduce costs of telecommunications equipment?
- Are partnerships being established between government, the private sector, organizations, and civil society that maximize the possibilities of access, and specifically access for rural stakeholders?
- Are rural organizations engaging in telecommunication policy debates?
- If so, how and to what effect?
- Are rural organizations networked and is there scope for improving communication between them within the country, at regional, continental and international level?

Research involves doing a lot of legwork.

You may find that much of your research work has already been done for you, e.g. there may be information on the Internet, in the library, or available from a government department or an NGO.

This means that you don't need to start your research from scratch.

Consider what you need to know very carefully first, talk to other people in your network/community/region, and determine where the information on your issue(s) may be located.

Institutional policy barriers

Identify the Key Players and Their Positions

The key players in establishing basic telecommunication services in rural areas typically include:

- Telecommunications service providers (also know as operators)
- Regulators and policy-makers
- Telecommunications policy reform advocates (most often found in, and focused on, urban service issues, and sometimes just emerging in rural areas)
- Rural stakeholders (current and potential)
- "Last Mile" entrepreneurs – phone shop operators and cybercafe/telecentre operators

Questions you need to raise about the players' positions on universal access policy:

- Whose interests are served by ICT Policy?
- Will ICT policy serve to promote universal use, or will there be social exclusion?
- Is gender considered in the policy?
- Is civil society involved in forming and implementing the policy?

Financial barriers

Financial barriers are sometimes pointed to as the reason why an online community is unsustainable. Costs will vary widely depending on the answers to many questions related to partnerships, tools, revenue, and cost control.

Below, you can find a list of questions that are only examples of the type of things to think about. You should bring your committee together to draft questions that you'll need to answer to develop a sustainable fiscal model.

Partnerships

- Who can you develop partnerships with? (E.g. organizations, businesses, government and others)
- What will these partners bring to the effort in the way of revenue?
- What can they bring in the form of services that relieve your financial burden?

Tools

- What are the basic tools you need to meet the needs of your users?
- What tools can you get for little or no cost?
- What type of advanced tools will you need to attain?
- What costs are associated with any customization or synchronization of tools with your Web site?

Financial barriers

Revenue

- To what degree will your user community be willing and able to pay some type of user fee to support maintenance of the online community?
- Telecom services can be a profitable business in poor rural and remote regions. This potential can only be realized when there is an accurate understanding of rural market demand. Are there ways to link rural and remote telecom services with your initiative to generate revenue?
- With meaningful market demand data and a good understanding of rural community needs, universal access policies can be designed to attract private investors, providing them with a fair operating environment, and enabling them to serve market demand.
- Is there any capacity building or other services that may also be offered to partners or others, including education, e-commerce, training, and back office services to generate revenue?
- Do you have any founders or donors who can provide funding to seed or maintain operations?
- Are there leaders within the community who have contact with others who might be able to donate funds to your effort?
- Are there any types of associations that service your various users that might contribute to financing?

Cost Control

- Can shared resources be located in existing rural social structures such as temples, schools, government offices, and small markets, thus keeping costs low, while increasing traffic and helping to integrate the facility into the social fabric of the community? The ultimate location of the shared resource is determined by stakeholders.
- Some rural access demonstration projects are making use of low cost Internet-enabled digital appliances instead of traditional desktop computers. Can your project utilize some of these creative cost-cutting strategies? What other low cost or free tools are available?
- What type of shared training and technical support approaches can be distributed to the online community via peer-to-peer exchange, mentoring and other sharing strategies?

Rural / remote social barriers

There are a wide variety of issues related to the **social barriers** that may exist in rural and remote agricultural areas.

Illiteracy remains one of the most glaring impediments to outreach efforts and is especially pertinent in the case of women, who constitute the majority of those who are illiterate in Africa. Yet, to date, there seem to be few projects that link extension of ICT services to existing or potential literacy programs.

Rural / remote social barriers

Many women do not receive formal training or only minimal training in using ICT tools. Some complain of gender insensitivity in the training.
Invariably, those who feel most comfortable with ICTs have had a friend, reliable service provider or partner who has provided ongoing support.

This suggests that more attention needs to be paid both to **gender sensitivity** in the design of training, as well as to more innovative forms of **adult training** such as mentorship.

Women's double work burden takes its toll on their achieving a level of comfort with ICT tools. Unlike men, women often **don't have the time** to tinker- an important factor in developing ease with ICTs.

The physical location for telecentres requires a conscious effort to integrate gender considerations into policy, implementation and evaluation of these projects. Explore the possibility of using clinics- a community facility at which women often spend hours waiting for service- to house telecenter.

- Identify women whose homes can be a safe place for other women to utilize online community tools.
- Train gender organizations in the use of ICT for online community building.
- Develop capacity among women's organizations to enable them to generate content for the online community.

Rural / remote social barriers

Another important social issue deals with **languages**.

Since most online communities foster peer-to-peer sharing, it is advisable to identify those who are part of the community and have multi-lingual skills: these online community members can be helpful as translators for posted content.

Free and low-cost translation services are accessible on the Internet.

Rural / remote social barriers

The following ICT project highlights lessons learned that can be applied to your online community project.

Strategies used in this example include a **focus on the users** of the technology as opposed to the tools themselves.

CASE STUDY
Connecting Rural India to the World
Information Village Research Project (IVRP)

See interactive lesson to read the case study

Job aids

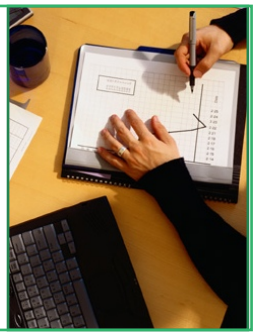
You can download and print documents that can help you in your work here.

Technology Barriers: Assessment Questions

Use this worksheet on your own and/or with your team to assess existing technical barriers your project might face.

Rural/Remote Capacity Assessment Questions

Use this worksheet with your team to assess existing capacity barriers your project might face.



Summary

Technical barriers to electronic networking **physically impede access** to technology.

Capacity barriers are related to **lack of**:

- basic technology skills,
- shared technology resources, or
- capacity building skills.

Institutional and policy related barriers do not allow access to certain populations. Stakeholders in electronic networks should be encouraged to get involved in policy discussions on local and national levels.

Financial barriers relate to the **real cost** of electronic networking. It is important to examine this before accepting the argument that rural and remote telecom services cannot be profitable.

Remote/rural **social barriers** keep certain populations, especially women, from access. A conscious effort is required to integrate gender considerations into policy, implementation and evaluation of projects.

If you want to learn more

TECHNICAL BARRIERS

Networked Society Readiness Guide: Network Access Readiness Assessment
The Berkman Centre for Internet & Society at Harvard Law School
http://cyber.law.harvard.edu/readinessguide/access.html
(Network Infrastructure readiness assessment tool)

Buwama and Nabweru Multipurpose Community Telecentres: Baseline Surveys in Uganda
Kayabwe, Samuel K. and Kibombo, Richard, IDRC
http://www.cidcm.umd.edu/ICT/telecentres/summaries/Buwama_and_Nabweru_Multipurpose_Community_Telecentres.htm
(case Study on Uganda Telecentres)

The Community Telecentre Cookbook For Africa: Recipes For Self-Sustainability
Development Gateway
http://topics.developmentgateway.org/ict/sdm/previewDocument.do~activeDocumentId=448971
(this article summarizes the content of the Cookbook)

Little engines that did - Case Histories from the Global Telecentre Movement
Fuchs, Richard P., Prepared for IDRC
http://web.idrc.ca/en/ev-10630-201-1-DO_TOPIC.html
(case histories that highlight the patterns of shared use and common, rather than individually owned, infrastructure in West Africa)

If you want to learn more

CAPACITY BARRIERS

ICTD Case Studies
The Asia-Pacific Development Information Programme (APDIP)
http://www.apdip.net/case/
Case Studies of networking projects in remote rural areas.

Rural Internet Access Project
CRESP-EcoPartners at Cornell University and CAREL, the Rural Alternatives Center
http://www.home.earthlink.net/~jgk5/
Link to project proposal and links to mailing lists.

Towards Universal Telecom Access for Rural and Remote Communities
TeleCommons Development Group
http://www.telecommons.com/uploaddocuments/Multi%2Dstakeholder%5Fengagement%5Ffor%5Frural%5Ftelecom%2Eppt
An overview of TDG's approach to Multi-stakeholder Engagement for Rural Telecom.

RURAL/REMOTE CAPACITY BARRIERS

ICTs - Transforming agricultural extension?: Papers
http://www.cta.nl/observatory2003/index.htm

The Network of Trinidad and Tobago NGOs for the Advancement of Women Relevance:
A most inspiring example of civil society engagement in UA policy formation.
http://www.c-t-u.org/Documents/USO_Wshop/Final%20report%20Trinidad%20&%20Tobago.doc

If you want to learn more

POLICY BARRIERS
Module 9 of the "ICT Policy for Civil Society" Curriculum Produced by APC and CTO
http://www.apc.org/english/news/index.shtml?x=16108
Towards Universal Telecom Access for Rural and Remote Communities

The Association for Progressive Communications
http://www.apc.org/english/news/index.shtml?x=16108
Beginner's handbook to get people more involved in ICT policy.
Best Practices – Summary of Developing ICT Policies

Global Internet Policy Initiative (GIPI)
http://www.internetpolicy.net/practices/
Beginner's handbook to get people more involved in ICT policy.

ICTs - transforming agricultural extension?
Technical Centre for Agricultural and Rural Cooperation ACP-EU
http://www.cta.nl/observatory2003/
Materials from CTA's annual meeting in 2003 focusing on how ICTs can enhance the effectiveness and efficiency of pro-poor agricultural extension.

ICT Policy: A Beginner's Handbook
The Association for Progressive Communications, edited by Chris Nicol
http://www.apc.org/books/
Beginner's handbook that lays out the issues and dispenses with the jargon to encourage more people to get involved in ICT policy processes..

Africa ICT Policy Monitor
The Association for Progressive Communications
http://www.apc.org/english/rights/africa/?-1-%27Access%27
Web portal for resources on ICT policy in Africa.

If you want to learn more

POLICY BARRIERS

Latin America and the Caribbean ICT Policy Monitor
The Association for Progressive Communications
http://www.apc.org/espanol/rights/lac/
Web portal for resources on ICT policy in Latin America with Spanish text for the Caribbean

ICT policy resources from APC
The Association for Progressive Communications
http://www.apc.org/english/rights/resources.shtml
Web portal for resources on ICT policy

Open and Closed Skies: Satellite Access in Africa
IDRC CDRI
http://web.idrc.ca/en/ev-53486-201-1-DO_TOPIC.html
Introduction to ICT policy and satellite access in Africa

VSAT Case Studies
Faculty of Commerce, Law and Management
University of the Witwatersrand, Johannesburg
http://web.idrc.ca/uploads/user-S/10734864331vsatstudy.pdf
Two country case studies on VSAT in Nigeria and Algeria including interviews with stakeholders in the sector and cybercafé user surveys.

Global VSAT Forum Web site
http://www.gvf.org/index.cfm
The Web site for this association of key companies involved in the business of delivering advanced digital fixed satellite systems and services to consumers, commercial and government enterprises worldwide.

If you want to learn more

RURAL/REMOTE SOCIAL BARRIERS
NET GAINS: African Women Take Stock of Information and Communication Technologies (A joint research project of APC - Africa - Women and FEMNET, June 2000)
http://www.apcafricawomen.org/netgains.htm

Women's information services and networks: a global source book
Edited by Sarah Cummings, Henk van Dam and Minke V
The Royal Tropical Institute (KIT)
http://www.kit.nl/frameset.asp?/ils/html/gsd_wisn_contents.asp&frnr=1&
Collection of resources on women and ICT

Gender and ICTs
Bridge, Institute of Development Studies
http://www.ids.ac.uk/bridge/reports_gend_CEP.html
Collection of reports on gender and ICT

A Conference on Advancing Rural Women's Empowerment
WomensNet
http://womensnet.org.za/dimitra_conference/papers.shtml
Papers, resources, links and outcomes from the conference

FINANCIAL BARRIERS
Community Internet Access in Rural Areas: Solving the Economic Sustainability Puzzle
Best, Michael L. and Maclay, Colin, Center for International Development, Harvard University
http://www.cid.harvard.edu/cr/pdf/gitrr2002_ch08.pdf
Paper highlighting the necessity for building the international rural ICT market.

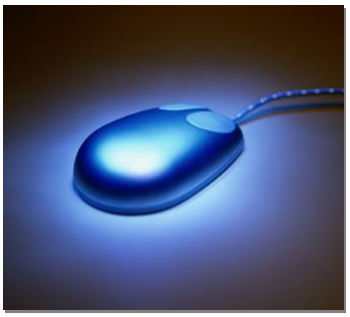
Towards Universal Telecom Access for Rural and Remote Communities
TeleCommons Development Group
http://www.telecommons.com/uploaddocuments/Executive%5FPaper%2Edoc
A review of the key opportunities and issues around rural telecommunications and universal access in developing countries.

Annex 2.5.1
Mini-lesson: The challenges of poor infrastructure and physical access to the Internet

Infrastructure refers to the basic facilities, services, and installations needed for the functioning of a community or society, such as transportation and communications systems, water and power lines, and public institutions.

Image Source: http://www.schoolnet.na/images/solarbjorn.gif

The most basic online community tools, e.g. a computer, software, and modem require a **power source**. Where electricity and power lines are not available, not very reliable or expensive, you will need to research alternative sources such as solar or battery power. Though these types of alternative energy sources may not be an option for larger scale online community projects, it is still advisable to learn about alternative power options.

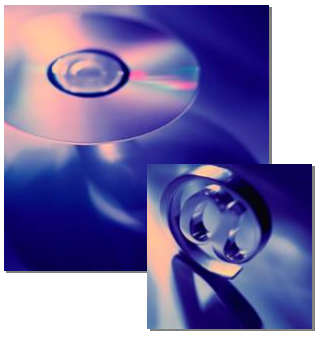


The proper functioning of the hardware necessary to facilitate online community activities is also dependent upon **local environmental conditions** that may affect how the technologies perform, factors such as heat and humidity (especially where air conditioning is rare or unattainable), electrical power surges, dust or exposure to other elements can render many information and communication technologies unusable.

Annex 2.5.2
Mini-lesson: Access to appropriate hardware/software tools and ongoing maintenance of those tools to keep them functional

Connectivity issues include **slow transmission speeds and lack of reliability**. In many cases, dialup connectivity, running on old and antiquated phone lines, is the only option. This can often be mitigated in online community projects that emphasize the use of **low-bandwidth tools** like e-mail to support information sharing and communication.

A growing number of online projects in developing countries are turning to wireless, radio, and satellite connectivity to bypass poor dial up connectivity through fixed lines, and are finding it far more reliable for about the same cost as dialup connections.



Despite limitations with connectivity, some online community and networking projects have overcome poor connectivity issues with simple technical solutions such as store-and-forward e-mail, caching web pages locally, extensive use of CD-ROMs, and pulling web pages through e-mail.

Annex 2.5.3
Mini-lesson: Issues related to technical support and sharing a limited number of computers or Internet access points

When thinking about your online community, you need to assess and address several types of technical support. These may include:

• **Hardware and infrastructure installation and support** – Your organization, partner organizations, telecenters, Internet cafés and other hubs for online community participation may need support in purchasing and setting up computers, installing software and repairing machines as problems arise.

• **Network administration** – Many groups of individuals and organizations may already be or need to be connected through local or wide area networks. These may be wired, wireless or satellite connections. You may need support to keep these types of networks running.

• **Special application development -** Web site or other tools to support your online community. This could include database design and development or customization.

• **Supporting users with technical questions –** Distribution networks helping users with questions that relate to their ability to access, navigate and utilize the online community tools. It could even include helping users connect to other users to get questions answered.

Since most online community initiatives are geographically dispersed, there is often no need for a single full-time computer technician.

In the needs analysis stage it is important to understand **what barriers exist that will hamper your efforts to maintain the online community tools**.

For example, online community initiatives often face the barrier of not having adequate skilled, user-friendly technical support. Usually they are spread across a country, continent or spread internationally: technical support provision is therefore quite complicated as it may need to be customized to different settings.

In most situations, we think about technical support in reaction to a crisis. As you may have already learned the hard way, **it isn't a matter of *if* something will go wrong, it is a matter of *when***. Since you know things WILL go wrong at some point, one key is to apply preventative measures to reduce technical support needs such as maintenance of computers and other equipment that users need to connect to the online community.

This can result in:

• reduced technical support needs,
• the building of leadership, ownership and confidence among online community members, and
• targeting of limited financial resources to non-technical support type needs such as marketing, infrastructure and/or capacity building.

Online networks by their very nature are **distributed** and it may therefore be useful to think of technical support provision as also distributed. In such a model, most of the energy is distributed among those in the community.

For example, you may consider building the technical support capacity of an organization or group of organizations (e.g. schools, telecentres, local businesses, etc.) so they are able to support others with their technical support needs.

An online community, whose general purpose to connect people to each other, can stimulate **peer-to-peer support.** This could be an important component of a technical support plan. Peers or experts who can answer questions via e-mail, phone, or in person could handle many technical challenges that users have. Users can provide answers to technical questions that get published as content (e.g. FAQs, case studies) in the network archives.