I would like to start by thanking the ISTF and the Yale School of Forestry and Environmental Studies for inviting me, and Greg Dicum, who discovered me using the technology we’ll be talking about. He was using the gopher and discovered that I had participated as an advisor in a workshop that the United Nations Development Programme (UNDP) had called together in September 1992. That workshop dealt with a project that is the basis of a lot of the work I’ve been doing recently, The Sustainable Development Networking Program (SDNP), which had been an idea of Mr. Maurice Strong. As a member of the Vultman Commission in 1989, he proposed that, given the global knowledge base, and given some of the technologies for Computer Mediated Communications, it might be possible to assist in the development process by providing information access to key decision makers involved in making the concept of sustainable development a reality. Many of the lessons and points that I will relate today come from our practical experiences at SDNP in attempting to implement this idea.

COMPUTER MEDIATED COMMUNICATIONS AND DEVELOPMENT

The real objective of my talk today is to discuss the role of Computer Mediated Communications (CMC) technologies and to talk about how they would be useful in the context of building the capacity of Indigenous peoples to move towards their vision of sustainable development. As well, I think it is pertinent to talk about the use of these technologies for another very important reason, which I have not heard mentioned yet. This is the whole question of the Decade of Indigenous Peoples, and the commitment that the United Nations and the International Community made to Indig-
enous people as a result of Chapter 26 of Agenda 21, which deals with the needs of Indigenous people to achieve sustainable development.

In September 1992, the UNDP had the task of taking Agenda 21, the outcome of the United Nations Conference on Environment and Development (UNCED), and putting it into practice. Agenda 21 is a plan of action. It addresses the involvement of stakeholders at all levels in planning and policy making for sustainable development, and highlights the role and importance of various groups, including Indigenous people and traditional resource users. Chapter 40 of Agenda 21, the information chapter, noted the need to help bridge the data gap separating the North and the South, and the need to facilitate access to information for decision making. The goal of implementation is to use these technologies to assist this process, bearing in mind that sustainable development really is based on participatory processes: involvement of stakeholders and the creation of appropriate mechanisms for sharing information at all levels and across all sectors of society.

First, we will look at some of the specific technologies related to the use of Computer Mediated Communications as tools for enhancing interaction. I would like to make it clear that the technologies we are promoting when we talk about CMC are all management tools. They are not ends in themselves and we are not promoting the creation of infrastructure. We are not talking about creating dams or building fiber-optic networks. We are talking about the use of these technologies as tools to help bridge the gap between those who know and those who do not, or those who have something to say and those who are seeking information.

TECHNOLOGIES AND TOOLS USED FOR COMPUTER MEDIATED COMMUNICATIONS

CMC is the use of telecommunications media to allow computers to communicate with one another. Through CMC, and the technologies discussed below, it is estimated that over 35 million people communicate with one another over the Internet, using over 3 million host computers (Internet Society, 1994).

Various technologies are used for CMC. The following are examples of relevant communications technologies for those working toward sustainable development:

- Store and forward computer messaging systems based on the Unix to Unix Copy Program (UUCP) or FidoNet technologies
• Bulletin Board Systems (BBS)
• The Internet
• Commercial online services such as CompuServe, America Online, and others

The most important technologies for point-to-point communication — electronic mail (e-mail) in a fashion compatible with the Internet — are FidoNet and the Unix to Unix Copy Program (UUCP). With a computer, a modem and, most importantly, a telephone line that can be linked to the local urban grid, you can access the Internet for electronic mail purposes. You can run this with local expertise, assuming you’re using just one telephone line. Unix systems, which have interactive capabilities, require a systems engineer. There is a significant jump in building the capacity to run and maintain this type of operation.

Also important are satellite radio systems other than the commercial satellite systems. These are low-earth orbiting satellites that permit full use of packet radio technology and allow users to circumvent the telephone network, which can be extremely useful. You may be familiar with HealthNet, for example, a network that links medical practitioners around the world under circumstances where telephone communications are virtually impossible.

FIDO NET
FidoNet is a computer communications software that permits e-mail to be bundled and sent over telephone lines. Compression and optimization technologies are used to speed transmission so that 300 to 500 pages of messages can be sent in 5 or 6 minutes using high speed modems. FidoNet nodes are usually linked to a Bulletin Board System (BBS) and some FidoNet nodes are also linked to the Internet via UUCP. FidoNet is well established — many NGOs use it and USAID uses it for the Famine Early Warning System — and there are over 14,000 FidoNet nodes around the world (Mikelsons 1992).

UNIX TO UNIX COPY PROGRAM (UUCP)
UUCP is a part of the Unix operating system, although UUCP can operate alone and is not UNIX dependent. UUCP can also run on non-UNIX computers. UUCP uses file transfer protocols that are becoming as efficient as FidoNet. Hardware requirements are minimal: only a computer and a modem are required to provide connectivity (UNDP/IDRC 1993). UUCP supports direct connections to the Internet, through about 20,000 nodes around the world. Like FidoNet, most UUCP nodes are connected to a BBS, in this case
USENET, a public domain BBS also accessible through the Internet. There are over 7,000 conferences in the USENET BBS.

BULLETIN BOARD SYSTEMS (BBS)

BBSs are computer files that are available by telephoning a remote computer (logging in) using telecommunications software. E-mail is also a feature of BBSs, allowing BBS users to contribute to the conferences and also to send messages to one another and to others using FidoNet, UUCP or the Internet. An estimated 30,000 to 100,000 BBSs exist in North America alone, and a growing number are directly linked to the Internet. They are important sources of local information.

BBSs are an important supplement to the Internet because they provide free and local access to local news and information. This applies in North America as well as in other parts of the world. Linked to the FidoNet and UUCP technologies, they can also provide global connectivity.

THE INTERNET

The Internet is a family of networks using the TCP/IP protocol to exchange data (Krol 1993). The Internet is important because it is ubiquitous and because of its large and rapidly growing number of users: over 1 million new hosts or computers were added to the Internet in the first six months of 1994, an increase of 81% over the previous year (Internet Society 1994). The Internet has been predominantly non-commercial, but this is changing rapidly as commercial applications emerge (Taylor 1994; Resnick and Taylor 1994).

Internet applications include e-mail, remote login to other CPUs over the network (telnet), file transfer between computers (FTP), and various browsing and search tools such as gopher, Wide-Area Information Servers (WAIS), and the World Wide Web (WWW).

There are several networks that are relevant in the family of networks we call the Internet. We will go into more detail in considering one family of networks, the Association of Progressive Communications, in a moment. When the Internet Society talks about the number of countries connected, they’re really talking about this type of access — high-end, interactive access to the Internet. In fact, anyone who has a phone, no matter where they may be, has access to the Internet, unless security services have set up systems to capture and prevent transmission of fax or modem messages, as is the case in some countries.
COMMERCIAL ONLINE SERVICES

CompuServe, America Online, Prodigy Services, GEnie, Delphi, and others are commercial providers of computerized information services available for a subscription and usage fee. These commercial online services provide BBS services and access to a wide array of databases, but at a price. CompuServe offers access to over 1,700 databases. The average household income of the predominantly male (80%) users of CompuServe in the USA is $92,200 (Resnick and Taylor 1994). The commercial services could be relevant to local and traditional users as outlets for products and services for a very well-heeled, leisure-oriented and increasingly international clientele. There could also be a significant market opportunity for ecotourism and for a variety of cultural and learning exchanges.

These databases are extremely useful and they are very profitable to their producers because Commercial America uses them to maintain competitive advantage and to remain aware. They are very good sources of information.

Figure 1: Internet Global Infrastructure Diffusion
(Rutkowski, 1994)
Unfortunately, these services are not, generally speaking, available in the developing world, although I have seen some exceptions. Interestingly enough, access to Dialog, which is expensive, was supported in Tehran by the Islamic Republic of Iran to assist the research community. They had a host of computers with modems linked to the AT&T network to gain access to Dialog in order to answer queries that their scientists could not deal with because they had limited access to information, for reasons we all know.

THE INFORMATION GAP

Figure 1 is a measure of the data or information gap separating developing from so-called developed countries. The line shows a direct relationship between Gross National Product and connectivity, as measured by the number of hosts in a country. Countries are identified by their two-letter ISO codes. The country at the top right is the USA. The general tendency is that none of the African countries have any hosts at all, with the exception of Tunisia, Egypt, and South Africa. Also very few of the Muslim countries have interactive access. The country at the bottom of the graph at the $100 billion GNP level is Saudi Arabia. People there do have access, but on a per capita basis it is not very well distributed.

Out of about 3.2 million Internet hosts, there are over 10,000 hosts per country in the West, including Japan, and over 1.2 million in the USA alone. Countries with more than 1,000 hosts are still predominantly in the industrialized world, but countries of Latin America and Central and Eastern Europe are also represented. Malaysia and Thailand also have over 1,000 hosts each.

In a very few countries of the developing world, the Internet is openly accessible and not too expensive. The Philippines have recently developed PhilNet, a locally accessible Internet backbone. In Indonesia, on the other hand, access is prohibitively expensive. Even the University of Jakarta relies on international direct dialing to an Internet service provider in the USA using the UUCP protocol. Pakistan does not have direct access, but several BBS-type services exist, with UUCP links to the USA. One of these is the Sustainable Development Networking Program (SDNP) Pakistan, a project funded by UNDP as a follow-up to UNCED (Daudpota 1994).

THE ASSOCIATION OF PROGRESSIVE COMMUNICATIONS

Within the family of networks that are in the Internet, and that provide gateways that are compatible with the Internet protocol, one of the more relevant is the family of networks known as the Associa-
tion of Progressive Communications (APC). The APC is an advocacy network that operates on a not-for-profit basis, but that promotes the creation of these networks on a business planning basis. If you want to set up an APC node in a country, you must have a business plan that demonstrates cost recovery and charges your clients. On top of that, you have to participate in the global APC and provide, at least at the time this information was obtained, about a year and a half ago, a minimum of $5,000 a year in subscription fees, up to $25,000 depending on the number of users you have (APC 1993).

NGOs use CMC throughout the developing world, often at a local level. The APC has been in the forefront of efforts to help local

All of the systems shown here are "nodes". If you have a computer and modem you can log on to any of them and exchange messages with other users anywhere over the whole network. For most systems you will need to have an account so you have your own special identity on the system. Some FIDO systems only accept calls from other FIDO systems, but you can run FIDO software on your own computer.

Figure 2: The Association for Progressive Communications (APC) Nodes and Connected Systems, as of April 1992 (International Institute for Sustainable Development, 1993)
users develop the capacity to use CMC. Associates of APC and national affiliates have developed FidoNet or UUCP-based messaging systems for Africa (GreenNet), Asia and the Pacific (Pactok), and Cuba (Web).

There are two major nodes in the APC family of networks. The first, the Institute for Global Communications (IGC), is the hub for many other networks around the Americas, with direct connections to the Internet. In Canada, we have the Web, which provides access via UUCP to the whole of Cuba. Cuban electronic mail goes through the Web and then through the Web to the Internet. IGC is the gateway for a variety of different networks, including, for the South Pacific/Oceania region, Pegasus from Australia; Equinex in Ecuador; Huracan in Costa Rica; Nicarao in Nicaragua; Chasque in Uruguay; BolNet in Bolivia; and Alternex in Brazil with IBASE, a social-action NGO based in Rio de Janeiro which has promoted the use of these technologies heavily. I presume, given the discussions concerning Brazil at this conference, that those of you who work in the Amazon are all using Alternex. They are extremely proactive and I believe Alternex has a national network system set up.

GreenNet in the UK serves as a hub for many different countries. A hub in this particular instance means that they use the UUCP/FidoNet protocol to do the following: they keep their computers on all night, and when it is cheapest to do so, in London, New York, or San Francisco, they phone the receiving node’s computer and, using telecommunications protocols to crunch up information so that the transmission is fast and cheap, they make transmissions originate from where the telecommunication costs are least (the US in particular and to some extent the UK). When you are spending five dollars a minute to transmit from the South in some countries, you do not stay on line for very long. In fact, you are never really on line — you’re exchanging files.

GreenNet provides access to Africa south of the Sahara, to all of those countries which did not figure in the Internet connectivity list. It provides e-mail and a subset of conferences to a whole variety of these networks, including, for example, the Environmental Liaison Center International (ELCI), in Nairobi, which serves as a link to a variety of other NGOs and related organizations in and around Kenya.

Pegasus, in Australia, provides UUCP/FidoNet connectivity through Pactok to the South Pacific and to many other countries in the region. In many countries, this technology is the only way activists are hooked into what is happening. It is the only way they stay aware — assuming, again, that the security services have not blocked
off transmissions, because many of them have sophisticated tools to
detect modem communications.

OTHER NETWORKS FOR LOCAL AND TRADITIONAL
RESOURCE USERS

Local and traditional resource users, including Indigenous
peoples and marginalized groups in general, have mobilized. Some
are using CMC. Thanks to computer networking advocates such as
the APC, GeoNet and others (see IISD 1992), there are fora in which
to exchange experiences and organizations from which to seek help.
APC maintains over 20 electronic conference topics related to Indig-
enous people, for example. USENET newsgroups and Internet mail-
ing lists also focus on Indigenous people and, by extension, on local
and traditional resource users. In addition to the APC networks
discussed previously, a number of other initiatives are currently
operational around the world.

In Pakistan, the national branch of the World Conservation
Union (IUCN), is hosting the UNDP Sustainable Development
Networking Program (SDNP). The SDNP has established a BBS and
is linking this to local libraries. SDNP is also developing local nodes
in several cities and is promoting the creation of a national telecom-
communications infrastructure to support CMC. SDNP is active in over
20 countries around the world (Lankester 1994).

In Africa, Environment and Development Action in the Third
World (ENDA) operates a CMC node in Senegal. EL Taller operates
a small node in Tunis. ELCI operates a BBS linked to FidoNet. The
initiatives of the International Development Research Center
(IDRC) include efforts to encourage use of CMC. IDRC collaborates
with the Pan-African Development Information System (PADIS) of
the Economic Commission for Africa in the Capacity Building for
Electronic Communications for Africa (CABECA) project (PADIS
1993).

In most countries of Latin America, Internet access is available
through universities. UNDP SDNP also operates in several coun-
tries, including Nicaragua, Chile, Bolivia, Honduras and Costa Rica.

The South Pacific has one of the most interesting networks.
Peacesat is a satellite supported by the USA and made available to
the 22 Small Island Developing States and territories of the region to
improve telecommunications. Thirty-four ground stations allow
voice level communications and full Internet access at 9.6 Kilobits
per second. The Peacesat satellite complements the Pactok FidoNet
network as well as an Internet connection through the University of
Fiji in Suva.
In the South Pacific, distance and the small size and isolation of the countries means that traditional and local concerns predominate. Peacesat voice sessions are in local languages and dialects as well as in English. In the South Pacific, there is a real opportunity to use CMC at the local community level.

TRENDS IN CMC USE AND DIFFUSION

The present tendency in North America and Western Europe is for individuals using BBS technology or the Internet, and especially the World Wide Web (WWW) Internet application, to become globally accessible and highly specialized centers of information and expertise — traders in a variety of goods and services.

Agenda 21 puts special groups in the forefront of action for sustainable development. In order to seize the opportunity, these groups need to collaborate and communicate. Networking with individuals around the world is now possible for most any interest group, and many are doing so.

The technology is not an impediment, as experience using CMC in Africa and in many other parts of the developing world has demonstrated (Mikelsons 1992).

Factors promoting CMC diffusion include (modified from Rutkowski 1994):

- minimal or nonexistent regulatory constraints
- availability of leased lines and local access lines on a cost basis
- availability of reasonably priced computers
- competition from facility providers
- local expertise
- demand — a strong human network

The most important of these, in our experience, are the first two and the last one.

AVAILABILITY

One of the main constraints that separates the level of service we enjoy in North America from the reality in many developing countries is that in many cases access to the Internet is provided by a monopoly. Many of us in the North were familiarized with the Internet as students; we got it through our university computer centers, as part of the registration process. That is not the case in many of the developing countries. In fact there has been resistance at two levels: political, for some of the reasons I have indicated, and economic. The pulse and telecommunications authorities are the
ones that maintain the leased-line link through which everything electronic, whether privileged (bank and corporate networks) or public flows. The Internet flows using packet switching technologies, and the authorities do not like sharing what they have and they charge a premium for it.

For example, $60,000 a year to get a leased-line connection is a good price, for maybe 9.6 kilobaud to perhaps a 64 KBPS (kilobauds per second) pipe, for Internet connectivity. It costs $200,000 a month for the Polish Academic Research Network, which has 50,000 users, to get a 2.1 megabit per second line. In Fiji, to get a 2400 baud dedicated line from Australia, it costs the department of Computer Studies at the University of the South Pacific $33,000 a year. 2.4 kilobaud doesn’t allow for very much interactive access, so all the high-end technology really does not exist under those circumstances.

You might as well sign onto CompuServe in these countries, because with the commercial services there is more competition and there are more users. Though their rates will be expensive, you will get access to the Internet. In some countries, the service provider in the US will establish a reverse charge account. But the other point, of course, is that in many countries, charging is based on not just your annual subscription fee, but it is a per usage time fee and a per unit packet fee. You pay for every packet that goes down the line or that you receive, so it becomes very expensive.

Under these conditions, store and forward systems become cost-effective. Where these impediments exist, NGOs and others have developed local BBSs. International access is based on UUCP and FidoNet. In Latin America, UUCP and direct access to the Internet is becoming the norm. In Asia and the Pacific, the Pactok network uses FidoNet (Pactok Project 1993), but many other users also rely on UUCP.

Availability of computers is also a concern — most of you will be familiar with this if you work at the local community level. It is certainly a concern in many of the developing countries. In this regard, and in the area of establishing local expertise, the NGO community is an invaluable partner.
THE HUMAN NETWORK, OFFICIAL SUPPORT, AND NGOS

The existence of a strong human network, in which groups sharing common concerns are prepared to collaborate to meet shared objectives, is critical. This requires leadership, entrepreneurship and good management. In the end, people make a network, and technology facilitates its operation. Today more than ever, these technologies can and are having a major impact. Successful networking of various stakeholder groups during and since the United Nations Conference on Environment and Development has shown that open sharing of information and the use of CMC can have a beneficial influence on people, policies, plans, and actions for sustainable development.

We are working through the UN, which had worked exclusively through official agencies and organizations but is now changing. The UN is now making it perfectly clear that if governments do not want to involve their counterparts in the NGO community, then their initiatives will not be funded by the UN. For example, in Tunisia, there are 6000 NGOs, but the government did not want them to join us at the table due to security issues related to the fact that the country happens to be next to Algeria. We could understand their point of view, but we were a little concerned about making an investment where we would not have stakeholder participation. Official support is important and we can’t really work around it, but we can try negotiating. Bearing in mind that these countries did sign the Rio accords, and those accords are specific about multi-stakeholder processes and access to information, we are trying to leverage participation through the UNDP resident representatives. Sometimes we have to prod to get this to happen. Eventually, some Tunisian NGOs gained access to the national Internet network, Le Réseau National de la Recherche et de la Technologie, because of UNDP SDNP pressure.

To have local information and exchanges, there has to be something to exchange. Generally speaking, there is a great interest in making networks available. This is a market for the service — people are there to subscribe. In our feasibility studies, we spend a fair amount of time looking for spark plugs, often from the NGO community. Individuals and organizations can take over this initiative and make it happen. We know that if we give a project to the government, it is going to die. Better still is an existing initiative that we can build and enhance through this effort. We do not want to start creating things anew if we can build on what already exists.
THE INFORMATION CULTURE

The Internet is a Western phenomenon. During the negotiations that took place on the Information Chapter of Agenda 21 at PrepCom IV in New York, several developing countries objected to the first sentence proposed at the time: “Everyone is a decision maker for sustainable development.” The representative of one country stated that the government is the only decision-maker. The language was changed, and now it reads: “Everyone is a user and provider of information considered in the broad sense.”

Many countries have reservations about the freedom of access to information that individuals and non-governmental organizations enjoy on the Internet. Some USENET newsgroups deal with issues not openly discussed in many societies. Alt.sex and alt.sex.stories are two of the most popular newsgroups on the Internet (DEC Network Systems Laboratory 1993). In the newly refurbished, modern, and well-equipped computer science department in one Muslim country, USENET Newsgroups are kept offline for this reason. USENET News is not available as a result, and the university does not have direct Internet access.

In Africa, the UNDP Resident Representative in one West African country had his own doubts about promoting the use of CMC and charging users: “The oral tradition will never allow a place for such technologies. Getting people to pay for information will never be possible in Africa.”

In China, a Hong Kong-based journalist and a Chinese bureaucrat were imprisoned because they reported on the country’s gold reserves, a state secret. They are serving sentences of several years in prison as a result. Information that would be in the public domain in the West is privileged in some countries.

The Information Culture in the West clashes with the value systems prevalent in many parts of the world. However, even in these situations, access to the Internet is now becoming an issue as countries jockey for advantage and markets around the world open up. The creation of the World Trade Organization (WTO) will lead to more competition. Using the Internet and related technologies is essential for competitive advantage.

LESSONS LEARNED

In summary, the SDNP has been operating for over two and a half years with help from UNDP, IDRC of Canada, and others. The SDNP experience has revealed several factors that need to be taken into consideration when establishing CMC activities that link different stakeholder groups:

The Information Culture in the West clashes with the value systems prevalent in many parts of the world. However, even in these situations, access to the Internet is now becoming an issue.
possible next steps

For sustainable development to become a reality, there will be a need to agree on plans and policies, and, more importantly, a need to bring about attitudinal and behavioral changes. CMC and related information technologies are tools that can help stakeholders interact and collaborate so that all of this can take place. These technologies may have a role in enhancing the capacity of traditional and local resource users to become self-sufficient by helping them market products and services and acquire resources and support to help them meet their own needs and voice their views. For instance, ecotourism, negotiating agreements with commercial interests, direct marketing, developing and acquiring “Indigenous” or local knowledge resources and developing a strong presence and advocacy using CMC are options that local and traditional resource users may wish to consider.

Local and traditional resource users have particular characteristics. They are usually poor, without access to significant financial resources. Some are beyond even the cash economy, let alone telecommunications. With fewer rights than others, they are more open to exploitation, and in some cases, are disenfranchised or persecuted in one way or another.

Local and traditional resource users need help to establish their rights over property and other resources that contributed in the past to their survival. Among these are the knowledge resources that they have developed.

The year 1995 marks the beginning of the “Decade of the World’s Indigenous People 1995 - 2005.” This is an opportunity to review ongoing activities, consolidate efforts and collaborate in creating a global network to support and inform local and traditional resource users and their allies.
the proposal of SIDSNet, a global information sharing network for SIDS (UN, 1994). The SIDSNet proposal could be adapted to the special needs of local and traditional resources users. SIDSNet could be the basis of a funding proposal for such a global network.

I’d like to thank you very much for this opportunity. Thank you.

REFERENCES


Daudpota, I. 1994. Personal communication. (Daudpota is the Coordinator of the Sustainable Development Networking Program in Pakistan)

DEC Network Systems Laboratory. 1993. Top 40 newsgroups in order by traffic volume (Oct 93). DEC Networks Systems Laboratory, Palo Alto. reid@torrey.pa.dec.com

Sourcebook on Sustainable Development. Winnipeg: IISD. 134 pp.


Annandale: Pactok Project. 79 pp.


Internet Society News. 3(2): 6-7.

Taylor, D. 1994. The Internet Mall: Shopping the Information Highway. A list of commercial services available via the Internet. Intuitive Systems. Usenet posting. (tayloy@netcom.com)


Richard Labelle
A biologist by training, with a MSc in Plant Physiology and a diploma in Resource Management, Labelle has worked for Parks Canada, and for the International Center for Research in Agroforestry (ICRAF) in Nairobi where he spent 9 years as head of the Information and Documentation Programme. His consulting practice concentrates on enterprise-wide planning for sustainable development, and advising developing countries on the use of appropriate information technologies, including the Internet. He has been extensively involved with the UNDP Sustainable Development Networking Program (SDNP). He has also undertaken consulting work for the Regional Environmental Center for Central and Eastern Europe in Budapest and the International Development Research Center (IDRC). He was the leader of the UNDP team that proposed SIDSNet, the Small Island Developing States Information Network, to the General Assembly of the United Nations.
Richard Labelle Working Group

Participants in this session discussed the introduction and use of computer-mediated communications in developing countries. Key issues that arose during the talk were cooperation, limitations to applicability in rural areas, and access.

COOPERATION

Working through CMC technologies, more can be accomplished in less time with the help of people around the world who have information needed to resolve particular problems. According to Richard Labelle, cooperation should be the main reason for becoming part of the world communications network. He gave as an example the success in dealing quickly with a toxic waste spill in Pakistan. Through e-mail with the international community, workers were able to deal effectively with containment, cleanup, and environmental and health issues associated with the spill.

LIMITATIONS TO APPLICABILITY IN RURAL AREAS

Many participants questioned the usefulness of CMCs for rural community groups because of considerable barriers to implementation, including infrastructure, training, and cost. One option Labelle suggested for rural areas was packet radio. The lack of money, power, and technical capacity in rural communities, however, raised questions about the practicality of even this technology. One example of this technology working under these conditions is HealthNet in Zambia, which links rural areas to each other and to an urban hospital where doctors are able to help with prescriptions and diagnoses. People are saved agonizing trips to the city, and doctors and nurses in rural areas are learning from their colleagues in Lusaka.

ACCESS

Access to this level of communications is difficult in developing countries because the internal communications infrastructure is lacking or poorly maintained, governments are particular about who their citizens are talking to and what information they have access to, and because high technology is expensive.

The usual pattern to date has been for a large NGO or international development agency (such as CARE or USAID) to sponsor a community or local NGO. Often, computers and communications technology are kept in urban areas, where phone lines are better
maintained and access to maintenance is better.

Language is also a barrier to access. The general rule has been that to communicate on the global Internet, one must speak English. Electronic translators have a poor track record, yet CMCs are useful only if what is communicated can be assimilated. While local languages are being used on some BBSs, global connectivity requires some conduit into English.

The following excerpts expand on some of these topics.

Richard Labelle: In rural areas, access is practically nonexistent. Where there is access, it is usually associated with the presence of NGOs that have outside help. For example, CARE has had a history of supporting various groups in conserving environmental and agricultural knowledge. While the groups that they work with in the countryside don’t have direct access to these technologies, the regional offices of CARE have computers with global linkages through their office in Nairobi. So the end user — the small scale farmer — is not online. Nowhere.

There is hardly any direct use of computer technology by people living at the “local” level, whatever that means, and it’s not likely to happen for some time.

In the Philippines, which has a more open approach to the use of information, the government has funded an Internet network, and instead of charging the exorbitant rates that are the norm in the rest of South East Asia, the Filipinos have agreed that this is a good thing for development and that they will encourage access to the Internet at a subsidized rate. This network is now being used by the School of Forestry at the University of Los Baños to link villages using agroforestry so as to be able to share experiences and coordinate research.

Sebastián Poot: What can a group such as Yum Balam do to become a part of a network such as the APC? We are beginning to think about setting up a node for the Yucatán, but we are not certain about the steps that are involved in doing this — information technologies are something new for us.

RL: I would suggest talking to other NGOs and initiatives in the Yucatán and Mexico City, including La Neta, an electronic network in Mexico City.

Rachel Byard, Yale F&ES: What are the options if there aren’t any phone lines?

RL: Access is still not out of the question. The options are satellite systems, and the most cost-effective is using a technology known as packet radio. Packet radio uses a micromodem and a radio.
transmitter — $600 will pay for this setup. There is one satellite (so far) owned by the Institute of Development Studies (IDS) at the University of Sussex, in the UK. IDS, with the assistance of Volunteers in Technical Assistance (VITA), based in Arlington, uses this technology to link every point on the earth. They do this in the following fashion: the satellite flies between 100 and 300 km above the surface of the earth, so unlike the geostationary commercial satellites, this satellite is moving very fast and covers every part of the world 6 to 10 times a day, but only for 15 to 20 minute windows, which can be extended with a directional antenna. During these times, you can transmit to this satellite at 9.6 Kbps. There is not only no need for a telephone, but if you have solar panels, there is also no need for outside electricity.

What does this permit access to? Well, it can carry your information and download it to the IDS in the UK or elsewhere, and then your information goes through a server and is on the Internet. When you get a response, these are uploaded to the satellite and then downloaded to you when the satellite is in your area again. In the field, this means a delay of one or two days between sending a message and getting an answer.

James Jiler, Moderator, Yale F&ES: Since we have to end in about two minutes, I’d just like to ask you to recommend a single, comprehensive source of information on this technology and its use as it is related to development concerns.

RL: I would suggest the upcoming second edition of the Sourcebook on Sustainable Development, which will update the 1992 edition. You can get it from the International Institute for Sustainable Development (IISD).

The IISD can be contacted at:

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