HARNESSING ICTS: A CANADIAN FIRST NATIONS EXPERIENCE

K-NET CASE STUDY ON ECONOMIC DEVELOPMENT

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INTRODUCTION

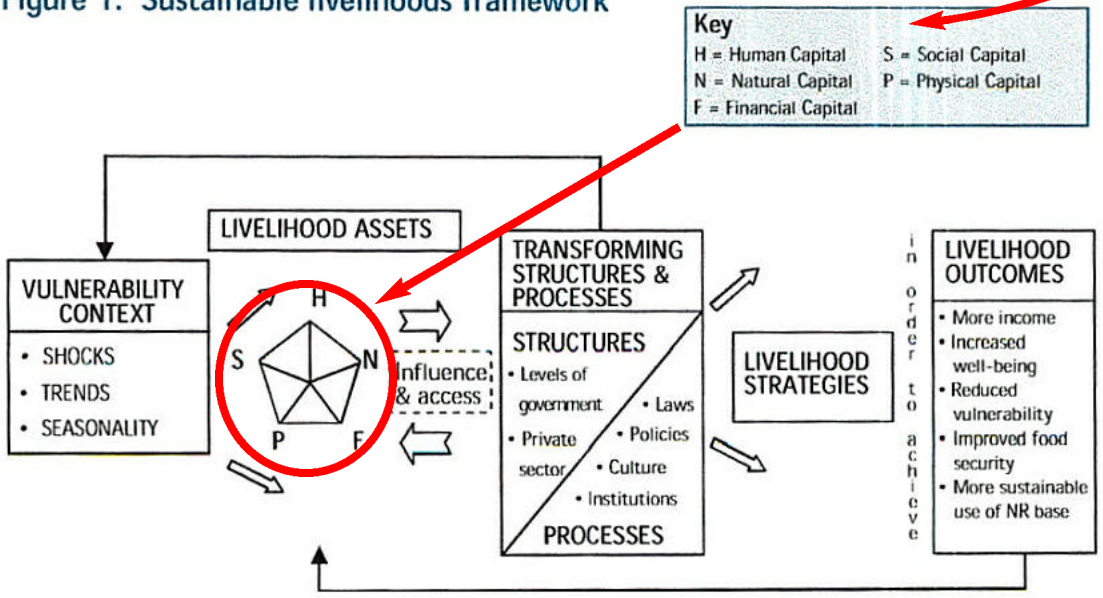
While there is no doubt that infrastructure upgrades bring positive change in the form of new opportunities for remote communities, it is not so easy to show how such upgrades drive economic development. Economic development is a catchy phrase that often means different things to different people, and for very remote communities with low population density, it has its own implications. Perhaps it is best to begin by framing economic development in the context of Keewaytinook Okimakanak (KO) communities.

This K-Net case study is presented within a Sustainable Livelihoods (SL) framework (Figure 1). The SL framework is used in many countries to capture the various interrelated issues that affect people's livelihoods. Clearly economic development means more than just financial growth. Within the SL framework, economic development includes an analysis of financial changes within the study area, but also considers the human, social, physical and natural dimensions of economic development, as well as the relationship between all five components.

The information and communication infrastructure and services facilitated by K-Net are contributing to the development of these five "livelihood assets" in KO communities:

Human capital refers to the people within a community, their skills, personal well-being, self-esteem, and ability to take initiative to enhance their own and their community's lives. **Social capital** refers to people connecting to people, recognizing the importance of networking and exchange, of creating and strengthening links of trust. **Physical capital** looks at the infrastructure

Figure 1. Sustainable livelihoods framework



1 For more details on the SL framework, please consult http://www.livelihoods.org

aspects of economic development – which, in the case of the KO communities, focuses on the installation and application of state-of-the-art information and communication technologies (ICTs), and making them available in e-Centres.

Natural capital is an important, though often overlooked, aspect of economic development. Natural resources, the land and environment, and their relationship to culture, language and heritage are aspects of the natural capital of communities.

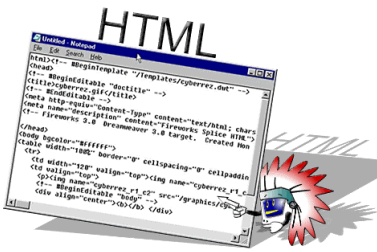
Financial capital is more commonly understood in terms of economic development. Jobs, income generation, financial growth and cost savings can be measured over the long term. Under the sustainable livelihoods framework, however, the dynamism and relationships between all five components are studied, resulting in an understanding of the contribution of each to the economic health of the community.

In the particular case of the K-Net communities, it is obvious that the technical services and infrastructure of the network are indeed affecting the sustainable livelihoods of the people. There is evidence showing that individuals are becoming more empowered and thinking in new ways, taking on new roles, accessing information to improve livelihoods, and exploring ways to make the investment economically sustainable after the Kuh-ke-nah Smart Demonstration Project. These accomplishments alone are impressive for communities as remote as the KO ones.

HUMAN CAPITAL

People in KO communities are **now connected** with one another and with the outside world. This connection is two-way: they can receive information, but more importantly, they can send messages and post content that is important to them using email, chat and personal websites. These communication tools reduce the sense of isolation that remote residents experience, and that youth are especially concerned about. These communities are only accessible by airplane, yet people are now connected by television and Internet to the rest of the world. The emphasis that K-Net has placed on uploading content significant to the KO communities is an important component. Being able to contribute local and culturally relevant content begins to balance the overwhelming volume of information and messages from the Internet and especially from television.[2]

Being able to **contribute to the World Wide Web** with content that is locally relevant is a conduit for building self-esteem, especially among the youth.



www.MyKnet.org has more than 8,000 sites built by (mostly) young people in the Nishnawbe Aski Nation region of northern Ontario. In most local e-Centres, half of the computers are on MyKnet.org. In other words, young people are creating and participating in uploading their own content rather than accessing the world of other web resources. **Somewhere in this process are the seeds for recreating culture among the new generation.**

2 People in KO communities have been watching television for some time – a medium that is notorious for shaping attitudes on the basis of global commercial interests.

Email communication is the key to the success of the technology. People's familiarity with this tool began in 1994 when K-Net established its first electronic bulletin board. In some communities, people learned to do **instant messaging before they had a phone**. This experience made them ready adopters of email, having experienced its power. According to Dan Pellerin, Network Manager, the K-Net email server has more than 12,000 active email accounts from a population of 20,000 in northwestern Ontario, of which 10,000 are directly in the north. This is a **50% email penetration rate**, one that Microsoft, AOL and Sympatico would be envious of. To put this into context, the national Canadian average for the year 2000 was approximately 40% Internet penetration (Statistics Canada emphasizes that there are large differences among income groups[3]), while the average for rural areas was 30%.[4]

People have acquired the **technical skills** and are now able to solve many of their own problems with the network and the computers. The network managers in Sioux Lookout receive fewer calls about problems because **technical problems are mostly handled at the community level**. Maintaining the network is possible thanks to trained community technicians. Pellerin explains:

> *"When they do call, they have already checked their router to see if their end is functional…when they call, we know that the problem is with the circuit itself." The e-Centre staff are multi-skilled; on any one day, they may help people with content, software, hardware or network maintenance.*

The e-Centre managers are now concerned with sustaining the infrastructure and services. They are preparing proposals to attract funding agencies and partners to keep the network operational. This is a sign of **empowered professionals** in communities where a few years ago, these sets of skills and confidence could not be found.

Local people know how to log-on to the videoconferencing unit, they get in touch with family, they have a sense of accomplishment, and they are using the technology to communicate and share. The **sense of satisfaction** that comes from these activities is a good sign of human capital in the making.

SOCIAL CAPITAL

Social capital refers to people connecting to people. It recognizes the importance of networking and exchange, of creating and strengthening links of trust.

Family ties in the North are strong, as in most traditional societies. In the recent past, family members who traveled away from their community for school or medical treatment would have been limited to radio communication and, in some cases, phone calls to stay in touch with family members. Now, even when people cannot travel due to old age or high costs, they can stay in contact over great distances using the K-Net tools. Families in times of stress

K-Net servers receive more than 20 million hits in October

Posted by: Brian Beaton, brian.beaton@knet.ca on Sat. November 01, 2003 - 06:10AM GMT

Personal web pages at MyKnet.org continue to be the most popular on-line space for the Nishnawbe Aski to browse. In October there were over 13 millions hits on this K-Net server (an additional 2 million hits from the previous month)!

All together there were over 20 MILLION hits occurring on the six most popular monitored K-Net servers throughout September. Specifically, on these six servers with traffic graphs, there were a total of 20,619,828 hits made to these on-line services provided by Keewaytinook Okimakanak. The six servers include myknet.org, knet.ca, webmail.knet.ca, hosting.knet.ca, highschool.knet.ca and photos.knet.ca.

Most of the K-Net servers that are being monitored for hits, visits and usage statistics using the webalizer program again showed an increase during the month. But http://myknet.org rose by another 2 million hits to demonstrate the rapid take up of these communication tools among users across the north.

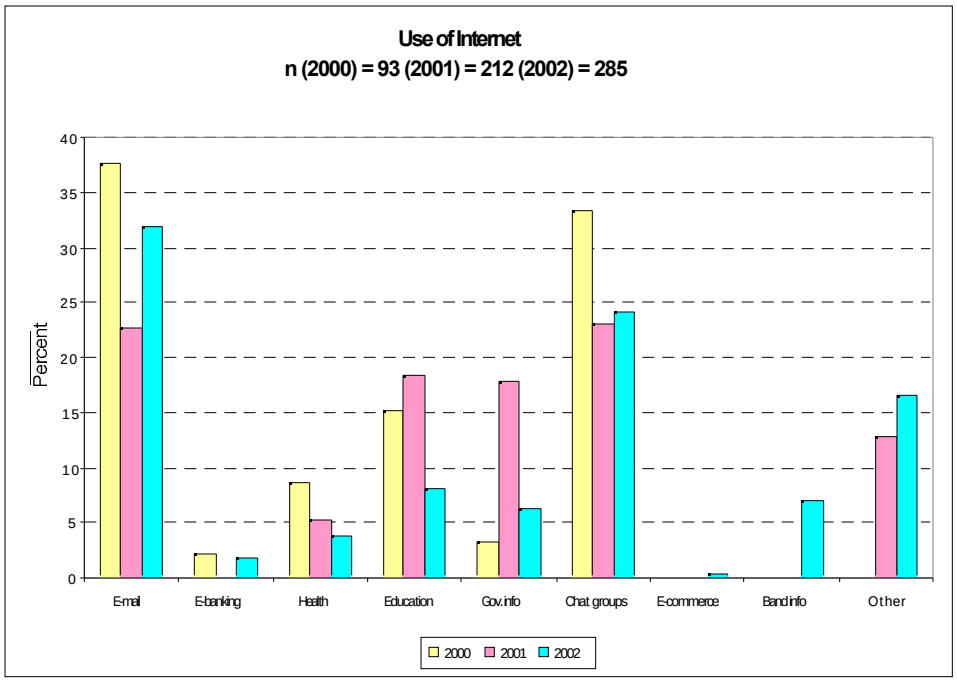
3 Sciada, G. 2002. *The Digital Divide in Canada*. Statistics Canada. http://www.statcan.ca/english/research/56F0009XIE/56F0009XIE.pdf

4 Sciadas, G. 2002. *Unveiling the Digital Divide*. Statistics Canada. http://www.statcan.ca/english/research/56F0004MIE/56F0004MIE2002007.pdf (p.7)

can connect with loved ones. This coming together through the technology is especially important when so many families have children studying in schools far away from the community. Among the most popular K-Net sites is http://hosting.knet.ca/~mothers/fortsevernpage.htm where photos are uploaded of new mothers and their babies.

People in the KO communities are talking to each other, be it by email, chat, through their websites or by videoconference. The text box in page 4 appeared as a news item on the K-Net website; **the numbers speak for themselves.**

Since 2000, K-Net has been tracking **what the Internet is used for and by whom** (age group and gender) to have an idea of how people's use of the technology evolves in each community. The graph below shows the data from Keewaywin over the past three years.[5]



While this data is far from conclusive, it does suggest some **general trends**. For example, in this case, the use of Internet for chat groups decreased from 33.3% in 2000 to 24.2% in 2002 while the number of users (n) increased significantly. At the same time, email remained the main application and is used by close to one-third of all the respondents. Does this mean that people are migrating to other applications? It is too soon to tell, and the data from other KO communities does not always show the same trend.

Using broadband 2 weeks after getting phones for the first time

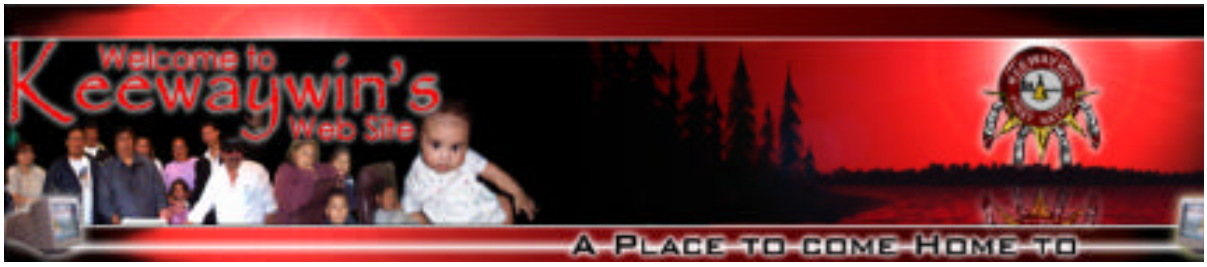
The phones were finally installed in Keewaywin in December of 2000. Two weeks later, in January of 2001, K-Net installed a videoconferencing unit and got it to work. People were using broadband two weeks after getting their first phones. People kept coming to see this…it was a very special day.

Beyond numbers of hits and uses of the Internet, however, lies a more profound question: how is the technology changing social capital? More specifically, **how is this technology changing the traditional ways of First Nations in Canada?** K-Net managers are keenly aware that the technology is changing the ways of the North. It is important to add that this was, from the start, an effort mandated by the First Nations Chiefs who supported educators who saw an enormous opportunity to broaden the horizon for their children. In other words, the initiative came from within.

A researcher at MIT recently quoted a 13-year-old boy who said to her that when you are with a computer, "…you take a little piece of your mind and put it into the computer's mind…and you start to see yourself differently." (p.27)[6] Children's skills in the KO communities have improved: keyboarding and English grammar have improved; and we are only beginning to appreciate how the computer is changing the way First Nations youth see themselves.

5 TeleCommons Development Group, 2003. *Community of Keewaywin: Preliminary Results for the Household Survey Period 2000 – 2002.*

6 Coutu, 2003. "Technology and Human Vulnerability: A Conversation with MIT's Sherry Turke." *Harvard Business Review 81* (9): 43-40.



The way people deal with personal problems is changing. For a society that is dedicating **enormous effort to healing** the effects of abuse in residential schools, being able to talk to someone that one trusts is extremely important.[7] Some individuals find useful support through professional counseling, while others have found support from people they meet in chat groups and email. The Turning Point website (http://www.turning-point.ca) "offers cyber-space for Aboriginal and non-Aboriginal people in Canada to have open and direct communication with each other." The technology makes it easier for people to contact outsiders.

This website, and the experience of counseling across the North, indicates a significant change in the make-up of communities. In the past, elders recount that the traditional society dealt with problems "openly" through communal problem-solving. Today, many people in their middle age prefer a combination of tools; sometimes the traditional healing circle is complemented with individual counseling with an outsider, while other times a virtual tool like Turning Point may be used. As some leaders have noted, there is no going back to the old ways; **the challenge is finding a balance** between the values that are central to a culture and the new tools that are being introduced.

PHYSICAL CAPITAL

The Keewaywin website (http://www.keewaywin.firstnation.ca) has a message at the very top: **A place to come home to**.

The technological infrastructure transformation that Keewaywin has undergone in the last few years makes it a much more attractive place to come home to. This also applies to the other KO communities: youth will tell you that when they left, the place was boring – nothing happened there – but now they can come back to a community that is connected to the world via the Internet with services that are starting to improve the standard of living.

What K-Net has accomplished in less than a decade in terms of network and technical infrastructure development is incredible: communities have gone from one phone for 400 people four years ago to accessing broadband services from individual homes. There are few rural communities in Canada – and particularly few remote ones – that have experienced such a dramatic transformation.


A planning meeting, North Spirit Lake e-Centre

The physical infrastructure that we see today in the form of networks, computers, buildings and satellite dishes is a telling story about physical capital. What is less evident is the human capital that made it happen.

7 For background on the residential schools and their impact on First Nations, please refer to http://www.turning-point.ca/index.php/article/frontpage/1

NATURAL CAPITAL

"We've always been a part of the land... Whenever you go, you want to come home. It is who we are, I guess."

– George Kakekaspan, Special Projects Coordinator

The sustainable livelihoods framework makes reference to natural capital, and in the North, this type of asset is closely linked to culture. The Ojibway, Oji-Cree, and Cree people are very close to the land, and their relationship to natural capital is cultural.

The traditional culture is embedded in that relationship to the natural world. The K-Net website celebrates culture in many ways, for example by sharing traditional legends (http://legends.knet.on.ca) passed on orally by the elders which can be heard in English or in Oji-Cree.

Visitors to the K-Net website can learn more about the traditional language by downloading the fonts to write in syllabics, with three different layouts to choose from. An Oji-Cree Translation Dictionary, which is under development, is also accessible online. A prototype can be accessed at http://www.knet.ca/webdata.

The local culture and its relationship to the land provide a unique opportunity for KO communities to explore eco-tourism. There is significant economic development potential as the global tourism market seeks new and remote destinations for travelers.

The new tools are opening up natural capital opportunities for the North:

- Resource management tools have the potential to enhance local development and employment opportunities;
- Geographic Information Systems (GIS) are being used for collecting and plotting traditional knowledge and archiving historical and local developments. One model that is being expanded upon can be seen at http://firstnationschools.ca/index.php?module=RMO&meid=19
- Traditional water routes are now being mapped and archived in partnership with Voyageurs North so communities can further develop their eco-tourism opportunities.

FINANCIAL CAPITAL

The KO communities have invested cash from their own resources into this effort. For the Smart Demonstration Project that began in 2000, each of the communities committed to contribute up to CAD$1million. These are significant amounts of money, especially for small, remote communities facing massive social and economic challenges, including unemployment rates of over 80%.

One immediate impact has been job creation: the e-Centres have created jobs. The same is true for the telehealth program and the Keewaytinook Internet High School, KiHS. The technicians that have been trained are from the community – there is a real effort to **create job opportunities** in the community and avoid dependency on outside experts. For example, at the time of writing this case study, the website for Deer Lake First Nation announced three job opportunities:

- Medical transportation driver
- Homemakers (three)
- Half-time half-time workers for an alcohol and drug abuse programme.

The infrastructure is also providing some income-generating opportunities by making traditional arts and crafts known to a world market (see http://arts.knet.ca).

In other areas, the benefits have been felt in reduced costs of services over a short period of time. **The cost of broadband has dropped 8 times**, from an initial monthly cost of CAD$14,000 (USD$11,000) for a T1 line (1.5Mb) to less than CAD$2,000 today (USD$1,500), and it can still be reduced. While these are not Toronto rates, they are approximating them. In future, as roads are built, fibre-optic technology will lead to further price reductions.

Economic impact goes beyond the jobs created directly by the Smart services in the form of **spin-off effects**. The Poplar Hill e-Centre has a hotel associated with it as well as an office. The Internet High School has led to additional accommodation for teachers. There are opportunities to circulate dollars within the community as teachers and visitors bring dollars to pay for services and goods provided by the community. Some of the infrastructure is being subsidized by fees for service, especially the cable system for televisions and modems.

The K-Net partners, namely government agencies, are finding that the network is the most cost-effective means for delivering services. The Internet High School and the telemedicine efforts are spreading to other communities in the North beyond the five KO communities, making the infrastructure more affordable by economies of scale.

Telehealth is also leading to significant savings by reducing the number of patients who have to be flown to larger cities for treatment. This new approach to medical services has played a key role in the establishment of a new medical school in and for the North, with heavy emphasis on telemedicine. Without K-Net's pilot experience, the investment by the medical community in a new infrastructure would not have been possible.

It is important to mention that, in many cases, the savings are being made by the external funding agencies. The extent to which these savings will be translated into improved and continued support to the communities remains to be seen.

Significant Savings

"It has been demonstrated that the cost of delivering this service as an ongoing program, with 2 to 3 clients drawn from all of the Keewaytinook Oldmakanak First Nations Communities being seen during weekly 1.5-hour teleconferencing sessions, averaging 4 per month over 12 months, is estimated to be as much as $985 per client-session (and potentially, even less). This estimate is significantly less than the overall cost of delivering this service by flying clients out to the regional First Nations counseling centre in Sioux Lookout, estimated to be $2,716 per client-session in this study." (p. 49)

Evaluation of the Keewaytinook Okimakanak Telepsychiatry Pilot Project, 2002
http://knet.ca/documents/KO-Telepsychiatry-Report-2002-12-21.pdf

Cable TV: Generating income

It wasn't that long ago, that the community of Deer Lake, Ontario was without cable TV. In the late 90s a man named Ennis A. Meekis had a lot to do with cable TV building being established and the signal being transmitted to the homes in Deer Lake. The Ennis A. Meekis Memorial T.V. Station was named in his memory.

Today the community members have access to their own community channel (21) and make good use of it by holding live TV auctions, TV bingos twice a week, and gospel nights on Wednesdays and Sundays of each week. The cable station is managed by the Cable Manager and TV Committee.

The TV Committee is in charge of running the TV station which includes the collection of cable payments, posting of daily announcements, and organizing TV Auction sales on a monthly basis, and also cable hook-ups and disconnections. (http://www.deerlake.firstnation.ca)

CONCLUSION

Economic development happens when human connectivity increases and when the sense of isolation and separation is reduced. In the North, "economic development" is what happens when:

- community members who have left the community because of sickness, schooling, or work keep in touch with their community and know what's happening (videoconferencing, homepages with local news, photos)
- there is more potential for those who have left to return (more access to information and the "outside world", less "boring" and isolating)
- members within the community keep in touch with family members, especially children who are away at school
- people stay in their community longer and still have their needs met (e.g. people needing medical or psychological treatment, kids have more time to mature before going away to high school)
- community members see what's going on in other places (in the North or further) and gather ideas for new things they'd like to promote in their own lives

As with all things in traditional societies, nothing changes easily. The challenge when introducing new technologies is to address the many small, locally relevant needs without disrupting the existing social fabric too drastically. As a local multi-media coordinator in one of the KO communities explains, "*This technology is leaping ahead really fast for us, and everybody's just starting to grasp this technology. The more they grasp, the more they want.*" K-Net communities are learning to apply ICTs to their unique situation in innovative ways and direct their own economic development.

Artists:

The six First Nation artists kindly agreed to support the use of their copyrighted art work to be included in this publication. They include Kevin Belmore, Derek Harper, Abe Kakepetum, Tim Tait, Alice Williams and Saul Williams. Their contact information is included at the end of each section of the document.