Hidden assets:
Young Professionals in Knowledge Networks

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IISD contributes to sustainable development by advancing policy recommendations on international trade and investment, economic instruments, climate change, measurement and indicators, and natural resource management. By using Internet communications, we report on international negotiations and broker knowledge gained through collaborative projects with global partners, resulting in more rigorous research, capacity building in developing countries and better dialogue between North and South.

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1.0 Why Examine the Role of Young Professionals in Knowledge Networks?

One of the key components of sustainable development is a conscious consideration of the needs of future generations. Comprising one fifth of the total world population,[1] today's young people will inherit many of the environmental, social and economic problems that have been created over the last century. **Young people will ultimately bear the responsibility for implementing the policies and programs necessary for sustainable development. It is essential that we begin to incorporate their skills, knowledge and ideas into current strategies, as well as develop their capacity to become leaders in the 21st century.**

It has proven difficult to create environments that are conducive to participation by young people in the sustainability debate. Senior decision-makers are often apprehensive about incorporating young people into decision-making processes and there are few opportunities available for youth to influence national or international policies. Many well-intentioned initiatives, such as youth advisory councils within governments and organizations, have had the unintentional effect of diverting the needs and concerns of young people from the larger debate. **New approaches must be found to engage young people in solving the challenges we face and in setting policies and directions for the future.**

We believe that one of the best tools we have to achieve this engagement of young people is the formal knowledge network. While previous studies of such networks have duly noted the importance of young people, they have investigated neither the significance of youth contributions to networks, nor the means to engage and support them more effectively in network operations. The Maurice Strong Task Force report, *Connecting with the World: Priorities for Canadian Internationalism in the 21st Century*,[2] focused on the need to accelerate the creation of substantive knowledge and the need for knowledge-based networks to multiply, disseminate and expand knowledge. The report also highlighted the need to create opportunities for young Canadians to build their international and policy-related capacity. But the Strong Task Force report did not connect the two—that young people might build their capacity by contributing to and benefiting from knowledge networks. As a follow-up to the Task Force report, IISD and IDRC commissioned a study of Canadian experience with formal knowledge networks. In the course of his research the author, Dr. Howard Clark, observed a recurring element in successful networks: young professionals—notably graduate students—were often instrumental in carrying out the basic research and development work of the network and benefited from the opportunity to participate in the network. But while Dr. Clark noted that many networks had this strong involvement in graduate education and training, he did not pursue this either as an important element for the success of the network, or as a means to build the

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[1] United Nations, 1998, Third Session of the World Youth Forum of the United Nations System, on the Internet at: http://www.unesco.org/webworld/infoyouth/V4_nl.html

[2] Maurice Strong Task Force, 1996, *Connecting with the World: Priorities for Canadian Internationalism in the 21st Century,* Ottawa: International Development Research Centre; Winnipeg: International Institute for Sustainable Development; Ottawa: The North-South Institute.

capacity of the next generation to implement new sustainable development policies and practices.

The objectives of this paper are to:

- **examine more closely the roles that young professionals play in knowledge networks;**

- **determine what their contributions are;**

- **determine what they gain from the network experience;**

- **uncover obstacles to their work; and**

- **make recommendations to strengthen their participation.**

Our use of the term "young professional" in this paper is deliberate. The young people working in these networks are adults and professionals. They are between the ages of 19 and 30; they already have at least one post secondary degree or certification, if not more; they usually have some prior work experience; and many related and valuable technical skills, language skills and experience travelling in different regions of the world. Moreover, these young professionals have adult concerns. They have significant financial commitments with student loans, even mortgages; some have spouses and partners and wish to plan for their futures together; and some are now caregivers to their own children. Nevertheless, their work and life experiences are still limited, and they are generally not yet in positions of significant influence on policy development and implementation locally, nationally or internationally.

In preparing this study, we reviewed current literature on networks, on citizen and youth engagement, reviewed IISD's own experiments with formal knowledge networks, and interviewed a number of individuals— young people and others—who are involved in national and international knowledge networks outside of IISD. Based on this accumulated body of knowledge and experience, we can make several pragmatic assertions about the role of young professionals in networks.

Summary observations

We have learned that there are three key benefits to networks from the inclusion of young professionals: the support and strengthening of the substantive research of the network; the strengthening of internal network processes and interactions of members; and the strengthening of the use of communications technologies.

1. Supporting, strengthening and ensuring the continuity of the research.

The goal of knowledge networks for sustainable development is to create new knowledge and solutions that address global sustainability issues. Integrating young people into the research and decision-making aspects of the network will ensure that their knowledge and ideas are part of these solutions. We found through our study that this active engagement of young professionals in the network does generate new research projects and invigorate existing ones. As the young

professionals become managers and decision-makers, they will carry this knowledge and experience forward into the future.

2. Strengthening internal network processes and interactions.

One of the strengths of the knowledge network model is its multisectoral, cross-regional structure. Knowledge networks are frequently organized to bring together the different perspectives and research agendas of academic, government and private sector institutions, and/or research institutes based in different regions of the world. It has been observed in North America that today's young people have the ability to adapt quickly to work in different cultures and languages.[3] A leading survey of Canadian social values noted that young people in the age range of 19–30 "tend to be much more at ease than their elders with change and complexity, and with people who are different from themselves."[4] They also tend to reject "traditional hierarchical relationships based on title, age, seniority."[5] These characteristics are conducive to effective collaboration and the building of strong partnerships across sectors and regions—key components of sustainable development projects in the 21st century.[6]

3. Strengthening the use of communications technologies.

Knowledge networks are underpinned by strong information technology infrastructures, supporting the acquisition of data and information, the virtual collaboration of partners, and the rapid dissemination of research results. Today's young people are often the most technologically literate segment of the labour market. Many young people in developed countries have had access to computers for most of their lives and are highly capable of setting up and maintaining the infrastructure required for knowledge networks to operate. Even those young people who have had no experience using modern information technology tend to be faster learners and less fearful of the technology than older adults. This "knowledge advantage" tends to reverse tradition by placing young people in a position where they are able to transfer knowledge to older generations, rather than vice versa.[7]

The gains to the young professionals themselves are also significant. Their own research skills and understanding of the work will be improved, as will their project management and communications skills. We believe that knowledge networks not only support the generation and sharing of knowledge, but they accelerate the professional development of young people, strengthening their ability to contribute to sustainability solutions. Benefits to young professionals include:

- **Building project management and leadership skills.**

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[3] Don Tapscott, 1997, *Growing Up Digital: The Rise of the Net Generation*, New York: McGraw-Hill.
[4] Michael Adams, 1997, *Sex in the Snow: Canadian Social Values at the End of the Millennium p.102.*
[5] Adams, p.103.
[6] Partnerships Between Different Sectors, 1999. A discussion paper presented at CIDA's International Cooperation Days 1999.
[7] Don Tapscott, 1997.

Through the network, young professionals fine-tune their ability to collaborate with others—particularly those from different cultural backgrounds and sectors—and to work efficiently in a virtual environment. Young professionals gain a first-hand education in how consensus is achieved; what it means to deliver on time and within budgets; and what is involved in persuading others within the network to do the same.

- **Improving access to funds for sustainable development research.**

We have learned that graduate students can have better access to funding for innovative research as a direct result of working within a knowledge network. Knowledge networks are designed to be more influential (and interesting to funders) because of the size and structure of the network and the reputation of the members. With the support of senior network staff, it is quite possible other young professionals (e.g., interns, young employees) will be more likely to get support for their projects because the network exists to legitimize their proposals.

- **Strengthening ICT skills**

While young professionals bring an understanding of information and communications technologies (ICTs) to knowledge networks, many of them have little experience in using them to deliver different points of view. A knowledge network requires the integration of many different perspectives, rather than the development and marketing of an individual or corporate web site. By working in a network, young professionals learn to use the tools of their trade more effectively.

- **Broadening perspectives on sustainable development**

In networks, young professionals are exposed to a broad array of sustainable development perspectives at a formative age in their professional development. They are almost immediately placed, directly or indirectly, in contact with a range of leaders in their field. This strengthens their own knowledge base and improves their ability to comment substantively on sustainable development issues and to become effective agents of change.

Based on these benefits to both networks and the young professionals themselves, and considering a number of significant obstacles to their effective participation in networks, we make a series of recommendations at the end of this paper for strengthening the role of young professionals.

As we move towards a more stateless, borderless, global society, it is becoming increasingly important that we provide young people from around the world with the necessary skills, knowledge and experience to make informed decisions and to actively contribute to sustainable development work. Skilled, informed young professionals will be the essential building blocks to achieving sustainable economic and social development in the coming century.[8] We hope that the collaborative model of the knowledge network will engage and build

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[8] Panel Youth: The Future of International Cooperation, A discussion paper presented at CIDA's International Cooperation Days 1999.

the capacity of this upcoming generation of decision-makers. In turn, we hope that the contributions of young professionals will strengthen knowledge networks, accelerating the generation and communication of new ideas and solutions to the challenges we all face.

2.0 Essential Components of Knowledge Networks

This examination of young professionals' participation in knowledge networks is part of a series of working papers under development by IISD. We believe that additional work is needed "to test, refine and adapt the model of a formal knowledge network"[9] described in the Howard Clark study. We currently operate three formal knowledge networks: the Sustainable Development Communications Network (formerly known by its project name, "Spinning the Web"); the Trade Knowledge Network; and the Climate Change Knowledge Network. While these networks each have their own research and communications agendas, we are also using them to fine tune and evaluate the knowledge network approach to sustainable development.

The following is a brief synopsis of what we have learned to date about the basic building blocks for successful knowledge networks.

2.1 What are knowledge networks?

> *Knowledge networks consist of groups of expert institutions working together on a common concern, strengthening each other's research and communications capacity, sharing knowledge bases and developing solutions that are made available for use by others outside the network.*

Four key points are captured in this definition:

1. Knowledge networks require institutional commitment beyond the participation of individuals and experts.
2. Institutional collaboration takes place around a single issue or problem rather than a broad spectrum of interests. Focus and work plans are essential.
3. Strengthening capacity is critical to this model. We create knowledge networks in order to learn from each other and build on each other's strengths.
4. Knowledge networks must move beyond basic information exchange to actually working together on solutions.

2.2 Components for success

Although knowledge networks can vary widely in their scope, objectives and memberships, we believe that all of them must contain the following components in order to be successful:

- focus, structure and governance agreements;
- internal communications infrastructure and virtual teamwork protocols;
- external communications and engagement strategies for network audiences;
- evaluation mechanism; and
- participation of young professionals.

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[9] Clark, Howard, 1998, Formal Knowledge Networks: A Study of Canadian Experience, Winnipeg: IISD, p.v.

1. Focus, structure and governance agreements.

We have learned through our own networks, and through our observation of other networks, that each knowledge network must focus on a central issue or concern rather than a broad spectrum of subjects. Research projects should attempt to innovate; to break new ground. The knowledge network must look for new ideas and approaches. It must move beyond the traditional information exchange; the network must be prepared to take risks. A research agenda should be established to guide the work of the organizations in the network.

Knowledge networks need structure and discipline to be effective and influential. The selection of partner organizations to join the network is an absolutely critical part of the process. Each organization has to have more than just an interest in the topic; it has to have real institutional strength to do quality research on the issue. Each organization has to have a proven capacity to influence the policy process. Cross-fertilization of ideas is stronger when the network includes private sector as well as civil society groups; government as well as academic. The multisectoral composition of a knowledge network can lead to real innovation and practical implementation of policies and solutions.

A formal, signed governance agreement underpins the operation of the network. The agreement outlines duties and responsibilities of members and the mechanisms for decision-making. It is often necessary to mandate one organization to be responsible for coordinating and monitoring research agendas and communications strategies for the network. This coordinating body is often referred to as the Secretariat or Network Coordination Unit.

2. Internal communications infrastructure and virtual teamwork protocols.

Knowledge networks require good internal communications infrastructure and protocols to support the joint work of the network, for members to learn from each other and build on each other's strengths. An important step in managing a knowledge network is the creation of the private, closed "extranet" to link up the network members. The extranet provides a common "office" for the network. Members can post network documents and progress on research, and conference electronically with other network members. An understanding of virtual teamwork is essential for members to interact creatively and productively within the objectives and timelines of network projects.

3. External communications and engagement strategies for network audiences.

The knowledge created by the network must be for broader application by audiences outside of the network. Communications strategies should be developed for the release of research findings: network web site, print and electronic publishing, open computer conferences to discuss work with broader audiences; and strategies for flowing the research results and recommendations into other media (print, radio, TV interviews, etc.). Networks need to consider how to engage target audiences more directly in the network to ensure better take-up of network findings.

The current proliferation of networks is driven in part by the nearly universal availability of web communications technologies to support the work of organizations in networks. However, it has been our observation that many current and emerging knowledge networks are still not making

optimum use of the web for communicating with external audiences. We are therefore paying particular attention in our work on how to use this medium for effective audience identification, engagement and communication. We have drafted additional working papers on the tools and methods for communicating sustainable development on the web, and on tools for measuring web site use.

4. Evaluation mechanisms.

It is a common observation that what you can't measure, you can't manage. More research is required on how to measure the overall performance of knowledge networks in order to manage them more effectively. We suspect that pooling our knowledge and staff resources in a knowledge network may be a more cost-effective approach to research, particularly when adequately supported by good use of information and communications technologies. Clark's study of the Networks of Centres of Excellence and other Canadian networks comments specifically on the financial health of many of the formal networks. The success of knowledge networks should also be measured by the quality of work on the research agenda, network influence on decision-making processes, their operational performance (for example, their success in strengthening the capacity of partner organizations in research and communications), as well as the results of their communications strategies. Richard Stren and Janice Stein have developed a counterfactual approach to evaluating knowledge networks ("Would we know less if the network weren't in place?").[10] This approach is helpful in illustrating how a network can work to fill gaps in knowledge and innovation. IDRC's "outcome mapping" methodology might provide additional insight into the impacts that knowledge networks could have on relationships, actions and beliefs of those working within and influenced by the network.

5. Participation of young professionals.

Finally, it appears to us that effective networks also have roles for young professionals—graduate students, interns and young employees. This is likely because young people bring fresh research perspectives, energy, enthusiasm and strong Internet communications skills to the network. Until this study, the contributions of—and benefits to—young professionals in knowledge networks had not been examined. We will explore the role of young professionals in the remainder of this report.

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[10] Richard Stren and Janice Stein, Draft 1998. Knowledge and Networks, University of Toronto.

3.0 Methodology and Categorization

The research for this paper consisted of a series of interviews with experts on knowledge networks and individuals involved with these networks, as well as a literature review on networks, and on public and youth participation processes. We also drew on IISD's experience with international internship programs and on the results of an international electronic conference hosted by IISD called Youth: Building Knowledge Societies.[11]

3.1 Interview Group

All of the individuals interviewed are involved with national or international knowledge networks, and/or the use of information and communications technologies for collaboration. These networks are focused exclusively on researching and formulating solutions to sustainable development issues—economic, social or environmental. The networks, which varied substantially in their scope and objectives, included the following:

- Africa Youth Livelihoods Network
- Asian Eco-Technology Network
- Bellanet
- Canadian Model Forest Network
- Centre for Human Settlements
- The Founders Network
- Global Network of Players
- Pan-Asia Network
- Planet Xpress
- Sustainable Development Communications Network
- Sustainable Forest Management Network
- Trade Knowledge Network
- Vietnam Network of Centres for Poverty Reduction

Full descriptions of these networks, as well as their contact and web site information, can be found in Appendix 1 of this report. It is important to note that not all of these networks include all of the elements of a formal knowledge network. Those that are not "formal" knowledge networks are in the stages of adopting these characteristics within their networks. The exceptions to this are Bellanet, Planet Xpress and the Global Network of Players. Bellanet is an organization that provides technical assistance and advice to development institutions on how to effectively collaborate with others in a virtual environment. Planet Xpress and the Global Network of Players are both recently-launched youth networks that have been included for the purposes of identifying the challenges that young professionals face in establishing their own knowledge networks.

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[11] Youth: Building Knowledge Societies. Final report and recommendations to the Global Knowledge Partnership at the Global Knowledge Action Summit, Kuala Lumpur, 9 March 2000.

Care was taken to try to reach a balance between the young professionals and others interviewed, as it was felt that all perspectives were important to the research. For the purposes of this study, young professionals were considered to be individuals between the ages of 19 and 30. This age range was chosen because it is the same as the age range used by the Canadian government in its youth employment programs. In total, 13 young professionals and 12 senior staff involved in networks and networking were interviewed. The complete list of interview participants is included in Appendix 2 of this report.

We also made an effort to consider southern experience by interviewing junior and senior staff in northern and southern partner institutions in the networks. Based on the limited number of interviews, we were unable to discern any significant differences in benefits and obstacles to the participation of developing country young professionals in those networks. A more in-depth study is needed to ascertain whether there are any notable differences.

Interview participants were all asked the same sets of basic questions, attached in Appendix 3. Questions 1–7 were meant to determine how the interviewee defined a knowledge network and how the network they were involved with operated. The purpose of these questions was to establish the context in which interview participants were framing their answers. Questions 8–17, highlighted the major issues being addressed in this report (i.e., what roles do young professionals play in knowledge networks and how can their roles be strengthened?). While these questions formed the basis of the interviews, some degree of flexibility was exercised and participants were free to talk about any other issues they felt were relevant to the discussion. Anonymity was granted to each of the interview participants. We have therefore collated the results rather than reporting on each individual network.

3.2 Categories

Through our research, and our own experience with knowledge networks at IISD, we have identified three categories of young professionals working in knowledge networks: young employees, interns and graduate students. Most networks have a mix of young professionals— some with young employees and students; some with interns and employees, and so forth. The discussion below highlights the specific roles that young people in each of the three categories are playing in knowledge networks. In Sections 4 and 5, we have extrapolated a set of specific benefits of and obstacles to young professionals' involvement in knowledge networks. Some benefits and obstacles apply to all knowledge network structures; some depend upon whether the young professional is an employee, an intern or a student.

1. Young Employees

Young employees play a variety of roles in the network ranging from technical staff to project managers. We defined a young employee as someone under the age of 30, with less than four years work experience, who has been hired on contract for a period of more than one year to work on specific technical, administrative or research tasks within the network. The length of the contract and the terms of reference are generally determined by the funding available for network operations. Based on our research, we found that young employees tend to be assigned technical tasks such as developing and maintaining network databases, web sites and discussion

forums. One of our interviewees commented: "In formal knowledge networks young people are relegated to technical positions because this is all network leaders think they are able to do."

2. Interns

Internship and exchange programs for young professionals are becoming increasingly common. Their principal objective is to provide non-formal learning opportunities in a work environment.

In our study, all of the interns considered were young Canadians placed with partner organizations of a particular knowledge network. For example, IISD operates a paid internship program funded under the Canadian government's Youth Employment Strategy. The program places recent Canadian college or university graduates with partner organizations in its Sustainable Development Communications Network, Trade Knowledge Network and Climate Change Knowledge Network. Several of the other Canadian-based knowledge networks contacted for this study have funding for similar internship programs. In contrast to young employees and students, who are paid from the designated grants for the network, funding for internships usually comes from other sources.

Interns are usually contracted on a short-term basis of between six months and one year and receive a small amount of money to cover their travel and basic living costs. Depending on the intern, as well as the needs of the partner organization, the roles that these young people play can include coordinating network projects, researching network projects, organizing meetings and conferences, writing proposals, developing web sites and databases, and training staff on the use of information and communications technology so that they are better able to participate in the network.

3. Graduate Students

Many universities in Canada and elsewhere have established knowledge networks with partners at other academic institutions, non-profit organizations and/or the private sector. These networks lend themselves well to multi-disciplinary research programs. Since the networks are based in part at universities, many students become involved in the research projects. In general, most of the students involved in these networks are either master's, doctoral or post-doctoral students, although there are some undergraduates who work as research assistants during the summer months.

4.0 Reasons to Include Young Professionals in Knowledge Networks

Involving young professionals in knowledge networks can have many benefits for the network, its partner organizations, society in general and the young person in particular.

4.1 Benefits for the Network

1. Supporting, strengthening and ensuring continuity of the research

The goal of knowledge networks for sustainable development is to create and share new knowledge and solutions that address global sustainability issues. A starting premise for our research was that the integration of young people into the research and decision-making aspects of the network should ensure that their knowledge and ideas would be part of these solutions.

Our research showed that young professionals bring fresh perspectives and new approaches. Recent management literature on new organizational structures emphasizes the value of non-hierarchical, intergenerational project teams. One of the key benefits in the team approach is the access to fresh thinking that helps the team explore new project ideas.[12] A network can likewise benefit from the active integration of young professionals, through the resulting generation of new research projects and invigoration of old ones. Several network administrators we interviewed commented that the enthusiasm of their young professionals improved morale and encouraged other staff to heighten their own research efforts. We also observed that young professionals are more likely to speak in open and frank terms about a particular idea or project and are less likely to tolerate political jargon. According to one of the individuals we interviewed, this is beneficial because, **"Youth are able to comment substantively, while older people tend to come out with broad policy statements."** Another interview participant referred to this as, "replacing dinosaurs with newcomers to advance the paradigm shift."

The Canadian Networks of Centres of Excellence (NCE) program requires NCEs to show young researchers the environmental, social and economic implications of their work across sectors and regions.[13] This is more than a capacity-building issue for the young professionals themselves. In order for the research to continue into the future, the young professionals should be persuaded of the importance and value of the network's activities. One of the individuals we interviewed said: **"Youth act as a litmus test of whether or not there should be a knowledge network around a particular issue. If the research is not important to them, then how important is it really because they are what carries the research forward in the future."** Within the Trade Knowledge Network, one member representative noted that the absence of young professionals within his node was of some concern. Limited funds often prevent organizations from hiring or retaining junior staff who have enthusiasm and potential, but lack practical experience in the complexities of international trade regimes, emissions trading systems, clean development

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[12] George von Krogh. 1998. Care in Knowledge Creation. California Management Review 40(3): 133-153. Also, Bruce Tulgan, Rainmaker Thinking Inc. http://www.rainmakerthinking.com.
[13] Networks of Centres of Excellence. NCE Program Guide, 2000.
http://www.nce.gc.ca/en/comp/2021/guide/guide20002.htm#2e

mechanisms and so forth. Senior network members are beginning to recognize that they must find ways to fast track the transfer of their knowledge to the next generation in order to ensure the continuity of their work.

Some young employees have been credited as the driving force behind the development and implementation of particular network projects. Within the Sustainable Development Communications Network, young professionals employed at three network member organizations have taken the lead in designing and implementing network projects. In cases where work plans outstrip resources, interns are often able to assist with projects and develop them for their networks. Unfortunately, this can also be a disadvantage since there might be no long-term staff members interested in assuming responsibility for the project once the intern has left. In most cases, however, **the successful contribution of the intern has catalyzed greater momentum among the network partners to develop innovative and collaborative initiatives.**

In many university networks, students constitute the largest group of researchers working on network projects. In many cases, they carry out the lion's share of the research and, in some cases, are the lead researchers in particular projects. As a result, they are driving the work of the network forward. Students also work for substantially less remuneration than well-established researchers and consultants so network partners often get quality research at bargain prices. As one of the interviewees commented, **"without students, there likely would not be a network."**

We found through our interviews that this active engagement of young professionals in the network does generate new research projects and invigorate existing ones. As a side observation, we also think that this engagement of young professionals could lead to better implementation of policies and solutions developed by the network. Research on public participation indicates that inclusive approaches bring about policies and programs that are more readily accepted by all stakeholders.[14]

> "Youth participation does not only provide opportunities for growth and learning for young persons; it also contributes in real ways towards the development of the societies in which they live. Countries benefit from ensuring that young women and men have opportunities to offer their ideas, vision and expertise towards the development of society."[15]

2. Strengthening network processes and interactions with network members

One of the strengths of the knowledge network model is its multisectoral, cross-regional structure. Knowledge networks are frequently organized to bring together the different perspectives and research agendas of academic, government and private sector institutions, and/or research institutes based in different regions of the world. Knowledge networks therefore

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[14] Arnstein, Sherry. A Ladder of Citizen Participation. *AIP Journal.* July 1969: 216-224; Haid, P; Marques, E.C., Brown, J. Re-focusing the Lens: assessing the challenge of youth involvement in public policy. Ottawa: Institute on Governance, 1999 p. ii.

[15] United Nations. Youth Information Network. The Global Situation of Youth: Trends and Prospects, 2000-2025. . http://www.un.org/esa/socdev/unyin/wywatch/glob1-2.htm

require the participation of individuals who are innovative, open to collaboration, tolerant and willing to share their knowledge.

It has been observed in North America that today's young people have the ability to adapt quickly to work in different cultures and languages.[16] New management research in the United States has found that employees under the age of 30 are "open, tolerant, and they carry with them a new wave of volunteerism."[17] A leading survey of Canadian social values noted that **young people in the age range of 19–30 "tend to be much more at ease than their elders, with change and complexity, and with people who are different from themselves."**[18] They also tend to reject "traditional hierarchical relationships based on title, age, seniority."[19] These characteristics are conducive to the adoption of collaborative work styles and the building of strong partnerships across sectors and regions.

In our interviews with operational networks, we learned that **young professionals are in fact key to creating the backbone of network relationships.** Howard Clark noted that much of the research being undertaken by graduate students within the Canadian Networks of Centres of Excellence (NCEs) is economically important to public and private sector interests. The nature of the NCEs means that student researchers are able to talk with industry partners in order to connect industry concerns with the research methodology and results. For example, the Sustainable Forest Management network based out of the University of Alberta undertakes projects that support the Canadian forestry industry through the development of more sustainable production practices. **We noted in particular that it was the young professionals who were often making the linkages to the partners, thereby helping the knowledge network as a whole to achieve its potential.** The network recognizes and facilitates this process through a staff exchange program, allowing its young professionals to work for periods of time with other partners in the network. It also organizes regional and national conferences, and supports the attendance of its young professionals to present their research to the network partners.

IISD fosters strong personal and professional relationships among the young professionals themselves in its networks. Interns working with different partner organizations in a given knowledge network participate in an orientation session together as a way of building a common knowledge base, vocabulary and experience. The relationships developed ensure faster response times on network projects and clear communication of concerns and opportunities within the network.

We also found that young employees in some organizations have decision-making responsibilities at the operational level, undertaking research projects or coordinating and developing research programs within the network. Within the secretariat offices of two networks managed by IISD, we found that young employees were the ones responsible for bringing partners to consensus on certain issues and ensuring that they met deadlines for funding proposals and project research.

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[16] Don Tapscott, 1997, *Growing Up Digital: The Rise of the Net Generation*, New York: McGraw-Hill.
[17] Bruce Tulgan, Rainmaker Thinking, Inc. quoted in CNN.com Career Trends, September 29 2000, http://www.cnn.com/2000/CAREER/trends/09/29/generation.tulgan
[18] Michael Adams, 1997, *Sex in the Snow: Canadian Social Values at the End of the Millennium p.102.*
[19] Adams, p.103.

Not only can young professionals create the backbone of network relationships, they also have the ability to look beyond the network to connect with other like-minded organizations. For example, one senior staff person we interviewed noted that his intern had an extensive network of contacts with prominent sustainable development organizations. This individual believed that international recognition of his organization had increased as a direct result of the intern's networking skills.

3. Strengthening the use of communications technologies.

Knowledge networks are underpinned by strong information technology infrastructures, supporting the acquisition of data and information, the virtual collaboration of partners, and the rapid dissemination of research results. Today's young people are often the most technologically literate segment of the labour market. They are "shaped by the… forces [of] accelerating tech[nology] and rampant globalization."[20] Many young people in developed countries have had access to computers for most of their lives and are highly capable of setting up and maintaining the infrastructure required for knowledge networks to operate. They are familiar with the possibilities as well as the limitations of the technology. Even those young people who have had no experience using modern information technology tend to be faster learners and less fearful of the technology than older adults. This "knowledge advantage" tends to reverse tradition by placing young people in a position where they are able to transfer knowledge to older generations, rather than vice versa.[21]

As a result, many of those interviewed feel that **young professionals are well equipped to determine and design optimal approaches to virtual collaboration and the electronic dissemination of research results. As well, young people are typically more aware of new products and trends and more likely to experiment with adapting them for use by their organizations and networks.**

We found that young people with strong information and communications technology (ICT) skills often strengthen the capacity of older staff within their organizations by providing training sessions on e-mail use and Internet searching. This is especially the case for young professionals in developing countries where ICTs, particularly computers and Internet technology, are only now becoming available to these organizations. They have been able to transfer their skills in ICTs to their organizations through formal training and informal, on-the-job interactions. Some have also helped their organizations redevelop their communications strategies so that networks formally incorporate Internet components. **Typically, these young people also add value to information as they transform it and disseminate it to others.**

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[20] Bruce Tulgan, Rainmaker Thinking, Inc. quoted in CNN.com Career Trends, September 29 2000, http://www.cnn.com/2000/CAREER/trends/09/29/generation.tulgan/#r
[21] Don Tapscott, 1997

4.2 Benefits to young professionals

Based on our research, we believe that knowledge networks not only support the generation and sharing of knowledge, but that **they accelerate the professional development of young people, strengthening their ability to contribute to sustainability solutions.**

1. Building project management and leadership skills.

Knowledge networks encourage innovation and allow young professionals to experiment and create new products. The young people gain an understanding of different methods of "getting the job done." One intern commented that she learned a great deal about communication in an international setting, including the difficulties with multiple-language barriers. She learned about the differences between Western and other styles of communication and developed greater patience in trying to overcome barriers when seeking information. **Through the network, young professionals fine-tune their ability to collaborate with others, particularly those from different cultural backgrounds and sectors, and to work efficiently in a virtual environment.**

Young professionals learn from the experience and expertise of senior network members and gain a first-hand education in how the network really works—that is, how the players interact and where the power lies; how consensus is achieved; what it means to deliver on time and within budgets; and what is involved in persuading others within the network to do the same.

Another significant personal benefit mentioned by all of the young employees we interviewed is the opportunity to interact with other young people doing similar work within a given network. Seeing how others implement projects and disseminate research contributes to and enhances their own approach to project management. Some also mentioned that communicating with other young people in partner organizations is encouraging because it makes them realize that the work-related challenges and obstacles they face are universal in nature. This interaction also increases their capacity to get the job done.

In our research, we also looked at networks created by young people for young people. Our principal observation was that the young professionals assumed full responsibility and accountability for the work of the network. As a result, they were able to realize their leadership potential sooner perhaps than the young professionals in networks established and managed by more senior staff. This was one of the primary benefits of working in an all-youth organization.

2. Improving access to funds for sustainable development research.

Traditionally, young people have faced real barriers in seeking funding for research and development projects as a result of their age and inexperience. First, they have a much smaller network of contacts within funding organizations and are less likely to be made aware of current and upcoming funding opportunities. Secondly, they have not yet established a proven track record of solid, well-managed projects so funding agencies are leery about entrusting them with large sums of money. We have observed that graduate students in fact have better access to

funding for innovative research as a direct result of the knowledge network. However this did not seem to be the case for interns or young employees. Interns might be constrained by the short duration of their relationships with their contracts. Some young employees may be constrained by their relegation to more technical positions. Knowledge networks are designed to be more influential (and interesting to funders) because of the size and structure of the network and the reputation of the members. If some of the obstacles facing young professionals in networks are resolved (covered in Section 5), it is quite possible that they will be more likely to get support for their network projects because the network exists to legitimize their proposals—as is clearly the case for graduate students.

3. Strengthening ICT skills.

While young professionals bring an understanding of ICTs to knowledge networks, many of them have little experience in using them to deliver different points of view. A knowledge network requires the integration of many different perspectives, rather than the development and marketing of an individual or corporate web site. By working in a network, young professionals learn to use the tools of their trade more effectively.

We noted that young professionals in developing countries learned about the advantages and drawbacks to using information and communications technologies (ICTs) in regions where few people have access to the technology. Those that do must work around problems like intermittent power failures and poor telecommunications. This appreciation of the barriers faced by developing country partners in networks leads not only to better deployment of ICTs and other communications vehicles, but also to better project planning, more realistic expectations and timelines.

Within the networks run by young people, we noted that the ability of young professionals to use ICTs was key to the emergence of these new youth networks. In a recent international electronic conference organized by young people, it was observed that "ICTs are increasing the number and the effectiveness of these types of stakeholder networks by increasing the speed of information transfer and removing some previous barriers to participation (such as geographic constraints)."[22] However, while the ICT skills were acknowledged, it was recommended that more alliances and common interests need to be found among these youth networks. The knowledge network model provides a structure and focus that might be beneficial to these emerging youth networks.

4. Broadening perspectives on sustainable development.

Knowledge networks by their very nature focus on research activities conducted beyond the boundaries of a single institution. Young professionals are therefore not limited to learning from individuals within one organization—they are almost immediately placed, directly or indirectly, in contact with a range of leaders in their field. **Consequently, young professionals are exposed to a broad array of sustainable development perspectives at a formative age in**

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[22] Youth: Building Knowledge Societies. Final report and recommendations to the Global Knowledge Partnership at the Global Knowledge Action Summit, Kuala Lumpur, 9 March 2000. p.9.

their professional development. This strengthens their own knowledge base and improves their ability to comment substantively on sustainable development issues and to become effective agents of change. Canada's Networks of Centres of Excellence (NCE) funding competition now requires that NCE proposals include "training strategies that promote multidisciplinary and multisectoral research approaches and encourage trainees to consider the economic, social and ethical implications of their work."[23] The research undertaken by young professionals will be better rounded because it is based on a variety of viewpoints and interests, especially in those networks that cut across sectors and include partners from northern and southern institutions.

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[23] Networks of Centres of Excellence. *NCE Program Guide, 2000*.
http://www.nce.gc.ca/en/comp/2021/guide/guide20002.htm#2e

5.0 Constraints Against Effective Contributions by Young Professionals to Knowledge Networks

Our research identified a number of constraints that prevented networks from benefiting fully from the contributions of their young professionals and that prevented the young professionals from gaining the full value of the network experience. By recognizing the following constraints, organizations might be able to take steps to more fully integrate young professionals into their knowledge networks, capitalizing on the benefits to be realized through their involvement and building the capacity of the next generation of decision-makers.

1. The lack of experience of the young professional.

Many young people lack the life and work experiences—and sufficient depth of knowledge—to implement projects and manage a network. This can lead to inefficiencies and errors, and additional time required from senior staff and funders to rectify problems. As a result, it may be especially difficult to incorporate young professionals into projects of short duration. Some have also commented that this inexperience could lead to "reinventing the wheel" on projects since younger network members are not familiar with past initiatives, successes and failures.

Young professionals are often the ones dealing with the partner organizations, trying to coordinate research, generate consensus and meet deadlines. This can be a disadvantage for several reasons. First, young staff are usually dealing with very senior level people who might not take them seriously, a particular problem when attempting to encourage partners to meet important network deadlines. Young people might also lack a strong sense of the organizational politics and personalities within the partner organization and this can lead to misunderstandings and conflict over actions and intentions. Finally, bringing partners to consensus on certain issues can be an extremely sensitive and difficult process to navigate; yet very few young people possess the negotiation and conflict resolution skills necessary to undertake this task.

2. Time constraints for orientation and training in network operations.

One of the main obstacles preventing young people from accepting greater responsibility and increasing their participation within knowledge networks is the short-term contract. Many young employees and all graduate students and interns are brought into these knowledge networks on a short-term basis to work on specific network projects. As a result of such focused, limited involvement, these young people do not have the opportunity to develop relationships with network partners or to fully appreciate the network's history and functioning.

Some intern supervisors noted that they do not have time to fully appreciate and utilize the skills an intern possesses. They also expressed a concern about the amount of time it takes to train interns on organizational operations. Many of them simply cannot afford to take this time away from their other responsibilities.

For internships coordinated through a network secretariat, there were other distinct disadvantages. First and foremost is the fact that for every moment spent training interns in orientation and debriefing sessions and looking after their needs during their placements, secretariat staff have less time available to help operational staff in partner organizations. As well, although interns can foster stronger relationships between the secretariat and partner organizations, when the interns finish their placements, they often take their relationships at the host organization with them. In other words, the relationship does not transfer back to the secretariat. Additionally, if a partner organization has a negative experience with an intern this might impact their relationship with the secretariat.

Students are generally busy taking courses throughout the school year and during the summer months they are undertaking their field research. Working around student schedules to involve them in the knowledge network could actually slow down network operations, particularly if network managers are trying to include students in the development of research projects or in decision-making processes. Students might also avoid participating in network discussions because they perceive the time demands to be too overwhelming. As a result, network coordinators may have to work harder to encourage active student involvement in the network.

3. Reluctance of network managers to share information and delegate responsibility.

In many organizations, the individuals responsible for managing the knowledge network are senior members of the organization. It was frequently mentioned in our interviews that network managers seem unwilling to put faith in the ideas of young professionals, implying that young people have little to offer network processes. According to many, "If you are young without a title then no one listens to you." Some of those we interviewed noted that senior members are unwilling to share information about the network and might even withhold information from their junior counterparts. This is unfortunate—in order for knowledge networks to achieve their potential for innovative research and solutions, collaboration between junior and more senior researchers is essential. But collaboration requires trust between both parties and a willingness to cooperate and share information.

Organizational culture can be such that the contributions of young people are not recognized or appreciated. This is especially the case in hierarchical organizations where seniority and age are equated with knowledge and ability. In these instances, it is extremely difficult for a young person to prove their ability and to gain the necessary trust and respect from senior organization members to work within the knowledge network. While organizational culture is difficult to change, some have suggested that explicit recommendations for young professionals' involvement in network processes might start to remove this barrier.

Some senior staff do recognize that young professionals are able to contribute to the network beyond the execution of specific tasks. Even so, these individuals are often reluctant to delegate their network authority for budgeting, reporting and strategic planning to more junior members. The reasons vary. Time constraints and lack of experience are certainly key factors. We found another contentious issue was travel. Strategic planning is normally done at network meetings, and the network senior staff might wish to retain the privileges and opportunities for travel. In some organizations, "perks"—like travel—are considered a status of seniority. Junior staff

members have not yet paid their dues to the organization and, therefore, do not get to travel. In defense, some network managers pointed out that when partners send junior staff members to network meetings it could be interpreted by others that they are not taking the network seriously.

4. Lack of access to decision-making levels of the network.

Because of our interest in how knowledge networks might build capacity for young people to deal with sustainable development challenges, we paid particular attention in our interviews to their levels of responsibility and accountability for decision-making in the operations and strategic planning of the network. In discussing decision-making, the young professionals interviewed focused on two aspects: responsibility for designing, executing and reporting on individual projects; and input to network decisions—choice of projects, general directions of research, interpretation of findings and application of results.

Based on the limited number of interviews, it is difficult to draw any conclusions about the degree of decision-making and accountability that young employees have within knowledge networks. It appears that those hired to do project research and development, as well as those based at network secretariats, are generally granted opportunities to provide their input and, in some cases, participate in the decision-making of the network. No such opportunities were available to young employees in more technical positions. Naturally, those young people who are operating their own networks for sustainable development make the decisions within their network. With the exception of youth-run networks, we only found one young employee who served as the network representative for the partner organization, who was therefore fully involved in the network level decision-making on objectives, work plans and funding.

In most organizations, interns are provided the opportunity to present their ideas to the appropriate individuals, but are not granted the opportunity to attend network meetings or participate in electronic conferences with network partners in order to provide more formal input to decision-making. One of the interns we interviewed expressed frustration over their lack of ability to access and impact the decision-making level of the network. However, according to some of the others we interviewed, interns should not have input at the strategic planning level. Because they are typically on short-term contracts, it is not worth the amount of time senior network members must take to ensure that they understand the network well enough to effectively contribute to decision-making. Also, through past collaboration, network partners have come to appreciate each other's biases and expectations from the network. An intern who does not understand the personalities and working relationships of other members may upset the established balance and lead to inefficiencies in decision-making. As a result of these problems, many believe that interns should only be included in the decision making on the individual network projects on which they are working. Our interview data, however, suggest that even this level of involvement is rare. We found only two cases where interns had input to the design and management of the projects to which they were assigned.

Despite their significant contributions, there is generally no student involvement in the decision-making of these networks. With the exception of some doctoral and post-doctoral students, most students in these networks are integrated into a project once the primary research proposal has been written and funded. Students, or their advisors, then develop the thesis topic and methods to

complement and support the objectives of the larger network project already underway. In order to influence decision-making, students must first influence their advisors and then hope that their advisor influences higher-level decision-making. This situation is largely due to the duration of graduate programs and the way the school year is set up. It is difficult to get students involved at the start of project development when they may be busy with classes or not yet even enrolled in the graduate program.

5. Poor internal communications within a network.

Internal organizational communications and network communications are essential ingredients to incorporating young professionals into the network. Each individual working within a partner organization of a knowledge network should be aware that the network exists and understand the types of projects being undertaken by network members. Without such understanding, even individuals completing administrative tasks are not able to fully realize the context within which they are working. This can lead to inefficiencies and a lack of internal enthusiasm for network operations.

It is interesting to note that while communication was not mentioned as an obstacle during our interviews, many of the individuals we spoke to were unclear about the purpose or functioning of the network to which they belonged and one did not even know that their organization was part of a particular knowledge network until we requested an interview.

6. Lack of willingness to contribute on the part of the young professional.

Young people themselves might not be interested in or willing to contribute proactively to network projects. This could be a particular problem in university-based networks. Students can be busy with classes and other activities and might not be interested in making the time needed to contribute to the network beyond the basic fulfilling of their assigned tasks. Graduate students and interns might be unsure about their career goals and research interests and can find themselves working on a project for which they have no enthusiasm. The result could be poor quality research and a persistently negative attitude about the network. In other cases, young employees could lose interest in contributing unless they see tangible personal or community benefits, such as higher standards of living for local people, personal satisfaction in the importance of the work being done or monetary compensation for the work completed.

7. Mobility of young people.

Mobility presents another constraint. Today's young people are not afraid of changing jobs frequently, even if this requires moving to other cities or other countries. Young people with high technical skill sets are in particular demand and many find it advantageous to change jobs regularly, rather than build their capacity within a single organization. These individuals might opt to leave a partner organization because of greater challenges and responsibilities elsewhere or because of greater income opportunities. This is a serious problem in developing country partner organizations, where the private sector often provides incomes that are four to five times greater. In addition to exploring new job opportunities, today's young people are also more interested in life-long learning and many choose to leave knowledge networks to return to

school. Some have argued that such mobility should not discourage the participation of young people in knowledge networks but rather that these networks be designed to accommodate the transitioning in and out of staff members. This is part of the reason why organizational rather than individual commitment is one of the key ingredients for a successful sustainable development knowledge network.

8. Personal financial constraints.

The final obstacle to the participation of young professionals in knowledge networks, personal financial constraints, is a problem that pervades all aspects of their participation. For graduate students wishing to participate in these networks, the cost of funding their research projects and paying their tuition might be too great without some sort of network assistance. In cases where no financial help is available, students might simply have to opt out of the network. Similarly, there are instances where young people cannot afford to obtain the post-secondary education necessary to hold more strategic or substantive research positions within knowledge networks.

Young people who have completed post-secondary education are often saddled with large student loans and those with families might be paying off mortgages. Intern positions in knowledge networks receive little in the way of financial compensation and some organizations expect their interns to be volunteers. Those without personal financial stability simply cannot afford the luxury of an internship. Similarly, the job opportunities available in knowledge networks are often based in non-governmental organizations, which rarely have the financial resources to pay salaries consistent with other sectors. As a result, individuals might have to turn down lower-paying jobs in these networks for more lucrative opportunities in the private sector. The lure of well-paying jobs in the technology sector is particularly powerful. This has become an issue in developing country organizations where positions like web masters and Internet communications officers—jobs typically held by younger people in the network—are compensated better in the private sector. As a result, maintaining their participation in the network is becoming more and more difficult.

6.0 Recommendations

Knowledge networks require solid research agendas and collaboration among partners across sections and regions. They rely heavily on information and communications technologies to support research and collaboration and to disseminate research results. We have found that young professionals play important, but often undervalued, roles in strengthening networks in each one of these areas. We have also found that knowledge networks accelerate the professional development of young people, strengthening their ability to contribute to sustainability solutions. We conclude that knowledge networks will be less effective and less likely to achieve their sustainable development goals without the full involvement of young professionals.[24] In order for networks to fully realize the benefits of the involvement of young professionals, we offer a series of recommendations to strengthen their roles and to overcome some of the constraints to their participation. These recommendations are targeted for network managers and senior staff, for funders of knowledge networks projects, and for the young professionals themselves.

6.1 Recommendations for network managers and senior staff

1. Recognize and capitalize on the "Hidden Assets" of the network.

Use your young professionals to support and maintain the linkages (regular correspondence, communications and so forth) with your partners. The "backbone" they create through their enthusiasm, openness and networking skills will make your knowledge network stronger. Once they become more "visible" to all network partners, you will be able to use their collaboration instincts to assist your partners to meet objectives and deadlines and possibly to bring your partners to consensus on proposals and workplans.

Their comfort with ICTs will lead to optimal approaches to virtual collaboration and the electronic dissemination of research results. Young people are typically more aware of new products and trends and more likely to experiment with adapting them for use by their organizations and networks. They can also strengthen the capacity of older staff within their organizations by providing training sessions on e-mail use and Internet searching. Their expertise will add tremendous value to the work of the network. This being said, the ICT sector is continuously growing and changing. Therefore, you should support opportunities for your young professionals to update their technology skills on a regular basis.

2. Improve the internal communications of the network.

A lack of knowledge about network proceedings precludes anyone's ability to provide relevant comments and suggestions on the processes and projects.

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[24] The counterfactual approach to evaluating knowledge networks ("Would we know less if the network weren't in place?") is derived from a 1998 draft report by Richard Stren and Janice Stein, Knowledge and Networks, University of Toronto.

- In establishing your network, you should make it a requirement of membership that staff from the partner organizations in the network must regularly share information about network undertakings within their organizations or departments. This would ensure that network undertakings are being communicated to all individuals within your partner organizations, including those not directly involved in the work of the network.

- With respect to young professionals participating in network meetings, the reality is that travel funds are always limited, and those who are ultimately accountable for the directions of the network will want and need to be present for face-to-face meetings of the partners. If you do not have the funds to bring senior partners and young professionals to meetings, you should bring the young professionals in by alternative means. Internet videoconferencing during the meetings will allow the young professionals to be seen and heard. Also, you might wish to consider alternating "strategic" meetings of the network with "operational" meetings, with the latter designed expressly for the participation of the young professionals.

- Finally, set up an "extranet" for your network to facilitate interaction among all participants, including young professionals. Also, use the extranet to post network documents, report on research progress and keep an electronic list of all those working on the network.

3. Revise the structure and operations of your network to strengthen the participation of young professionals.

While young people are usually the ones undertaking research and technical work within the network, they are rarely included at strategic, decision-making levels. This type of involvement might not be appropriate for all young people, but there are certainly cases where it is necessary and should be encouraged.

- Make sure that you encourage input and participation from your young professionals at the secretariat of the network, including assigning them increasing levels of responsibility for budgets, timelines and reporting. This will set an example for your partner organizations and, ideally, overcome some perceptions that active participation of junior staff means that an organization is not taking the network seriously.

- Include your young professionals in the formulation of projects on which they will be working. Currently, most students and interns, as well as some employees, work solely on pre-determined network projects. Involving them at the project planning stage would give them a voice in the project's overall goals and objectives; ensure that they take a keen interest and ownership in the research project; and enhance their interest in contributing wholeheartedly to the network.

- Mobility of young professionals will always be an issue. To mitigate the transitioning in and out of network staff, you should maintain thorough documentation on the history of the network, roles, projects, and so forth. This will make it much easier to bring new young professionals up to speed.

4. Negotiate "young professional friendly" budgets and timelines with your funders.

Young professionals cannot effectively be incorporated into knowledge networks for sustainable development if networks have not created budgets and timelines that will support their participation.

- Whenever possible, look for the longer-term grants that will allow you to provide the young professionals working in the network with longer-term contracts. While short-term contracts may permit strategic involvement in particular projects, they ultimately inhibit the ability of young professionals to get intimately involved at the strategic decision-making level of the network. To fully contribute at the strategic level, young people need time to develop the trust of other network members and to fully understand and appreciate network history and operations. Make it a selling point with your funders that the additional resources required would allow you to build capacity for the young professionals involved.

- Financial compensation should be awarded to all young people participating in knowledge networks for sustainable development. Graduate students should receive funding to complete network research. Internship programs should provide participants with monetary compensation for their work. Young employees within knowledge networks should also be paid fairly for their contributions and not short-changed simply because they are young.

- Seek out and apply for internship and exchange programs, in order to find young professionals to support and enhance the work of your network.

5. Be proactive in building the decision-making capacity of your young professionals.

Training and professional development is often not adequately planned or budgeted for within network projects. Nevertheless, young professionals across the network should have access to training to strengthen their knowledge base, project management skills and related networking skills such as consensus building and conflict resolution.

- Create a staff exchange among the partner organizations in your network. Place your junior staff with other partner organizations within the knowledge network. This would improve their understanding of network operations and help them gain a perspective on the politics and personalities present in other partner organizations. It would also provide an opportunity for them to build personal relationships with individuals working in other organizations, a key component of successful virtual collaboration.

- Similar programs should also be developed in university-based networks so that students have the opportunity to work with different partner organizations, including those in the private sector, throughout the course of their thesis research. This would provide graduate students with the opportunity to learn about their field and relevant research methods

from experts outside of their respective universities. In addition, graduate students placed in private sector organizations would gain practical experience in a work environment.

- Peer-matching/mentorship programs should be implemented within knowledge networks. Under these programs, senior network members would be asked to act as mentors to the network's junior members. In this way, young professionals in the network would learn from the experience of their senior counterparts. They would also benefit by having a knowledgeable confidante who could answer their questions and "show them the ropes." Senior network members, on the other hand, would benefit by knowing that junior members have the capacity to continue their work in the network. They would also have access to a fresh thinker that could help them explore new project ideas.[25]

- With virtual communications, mentors and young professionals would not have to belong to the same partner organization, just the same knowledge network. Virtual communications would increase the young person's knowledge of the work of the other members of the network as well as build stronger relationships.

6. Design knowledge networks and associated research projects that will be relevant to young people and future generations.

Young people are important to the long-term viability of knowledge networks—they are the ones who will grow into the roles of network leaders and policy-makers. Their interest in participating, however, depends on the perceived relevance of network projects, as well as the ensuing personal and community benefits to be realized.

- Encourage young people within the network to develop new project ideas and, if they're capable, provide them with the opportunity to implement these projects. This will ensure that the ideas and priorities of young people are integrated into network projects and will enhance their interest in participating in future network projects. In addition, young people should be credited for their work within the network. Recognition for one's contributions is among the best motivators for greater involvement.

- Supervisors of young people within a knowledge network should be proactive in illustrating the benefits of the network to the young person involved. Young people with busy schedules are often unable to see or appreciate the benefits of the network and their work within the network

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[25] von Krogh, 1998

6.2 Recommendations for funders/supporters of knowledge networks

1. Look for well-defined roles for young professionals in network proposals.

The knowledge network model is becoming more popular and private and public sector funders are entertaining an increasing number of proposals to support such networks. In evaluating the merits of a knowledge network proposal, funders should become familiar with those basic elements necessary for a network to achieve its goals and objectives. We recommend that all such proposals should include well-defined roles for young professionals and that funders should insist on the participation of young professionals as part of the conditions of their grants.

2. Support internship and exchange programs.

International internship and exchange programs should be supported and funded to provide opportunities for young people in developed and developing countries to work in the partner organizations of knowledge networks. Through such programs, interns would gain valuable work experience while strengthening their leadership, decision-making, problem-solving, organizational and communication skills. As a result of work placements overseas or in their own countries, interns would develop an enhanced understanding of different cultures and circumstances and be better able to recognize the ingredients necessary for global sustainable development. These programs would also allow young people to test their interest in the organization/network before making a longer-term commitment and allow partner organizations to work with potential staff members before they are hired. This latter benefit is one of the main reasons why internships were ranked by the Canadian private sector as one of the top three most effective strategies for integrating young people into their operations.[26]

3. Support opportunities for young people to create their own knowledge networks.

There are many young people interested in developing their own knowledge networks to address the sustainability needs of their generation. These initiatives are beneficial because they cater specifically to the needs of young people and, in the process, enhance the profile and importance of sustainable development among future generations. They also create an opportunity for young people to network with their peers and to learn from each other about global sustainability issues. But one of the greatest obstacles young professionals face in any youth-driven project is access to consistent, long-term funding. Funding organizations need to be open to the proposals presented by young professionals and not base their funding decisions solely on the unproven track records of most young professionals. Again, if funding organizations are familiar with the checks and balances of a well-organized knowledge network, and insist on those elements being present in network proposals, they might be reassured that proponents for youth driven knowledge networks will use their grants effectively.

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[26] Canadian Youth Foundation, 1997a.

6.3 Recommendations for young professionals

1. Work to have your skills and achievements recognized in the network.

Building this kind of recognition and trust is difficult if most of the communications are virtual. Diligence in time-consuming personal communications (e.g., short thank-you notes, acknowledging receipt of faxes, thank people for phone calls, etc.) becomes of the utmost importance. Look for mentors who will champion your ideas and proposals. You can gain much from the wisdom and perspective of colleagues within the network who have been working in the field for many years.

2. Recognize that you might not yet have all the skills you need to participate.

Knowledge networks are political structures. Bringing partners to consensus on objectives, research directions and deliverables can be an extremely sensitive and difficult process to navigate, yet very few young people possess the negotiation and conflict resolution skills necessary to undertake this task. A young professional who does not understand the personalities and working relationships of other members might upset the established balance and cause inefficiencies in decision-making. It takes time to learn these skills. Read the network documentation, follow the interactions on network listservs and extranets, and be proactive in working with your supervisors and mentors to build your own leadership capacity.

3. Remember that knowledge networks are more "work" than "net."

You will find that while knowledge networks can be exciting in terms of their international contacts and partnerships, they are also about long hours, trials and errors, negotiations with partners, ever-present deadlines, and accountability to funders. Your reasons for accepting a position in a network, whether as a student, an intern or an employee, should be as much related to the nature of the work as for the senior researchers you may meet. What you learn from the work will be as important as the people you meet. You might be able to use your network contacts in future to further your personal career objectives, but do not let that take precedence over your responsibilities to support and ensure the success of the network.

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Appendix 2: Knowledge Networks for Sustainable Development Included in this Study

Africa Youth Livelihoods Knowledge Network

The Africa Youth Livelihoods Knowledge Network was initiated in 1998 by the International Development Research Institute (IDRC) in partnership with the University of Venda, Centre for Youth Studies in South Africa and the Centre for Strengthening Informal Sector Training and Enterprise (SITE) in Kenya.[27]

The purpose of the network is to link researchers, program practitioners, planners, youth and global experts in order to consolidate, generate and disseminate knowledge on policies and programs aimed at improving the livelihood capabilities and opportunities of young people in Africa. The Network concentrates specifically on the livelihood needs of young men and women who have little or no formal education, who are operating in the informal economy and who are increasingly detached from traditional kinship and social networks.[28]

Currently the network is operating in a somewhat informal manner. Venda University and IDRC are taking leading roles, but there are a number of organizations and individuals involved in the research. Rather than a set agenda, as the research of the network unfolds and new issues arise, different people take the lead and develop new research projects. The network, however, is taking steps to become more formalized. They are in the process of setting up a Network Secretariat in Africa which will develop a network business plan, focus the issues explored, develop research strategies, and implement a marketing strategy to disseminate research results and bring new partners and funders into the network. They are also planning to establish a larger, international Advisory Committee to guide the research agenda.[29]

Young people are the direct beneficiaries of this network and are also involved in the research.

WWW Address: http://www.idrc.ca/socdev/research/youth/index.html

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PO Box 8500

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[27] International Development Research Centre (IDRC), 1999. Africa Youth Livelihoods Knowledge Network.
[28] *Ibid.*
[29] Jamie Schnurr, Senior Research Officer, Youth Livelihoods and Enterprise, Program Branch, IDRC. Interview on November 15, 1999.

Ottawa, Ontario, Canada K1G 3H9

Street Address:
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Asian Ecotechnology Network

The Asian Ecotechnology Network (AEN), which is still in its infancy, was initiated by the UNESCO-Cousteau Ecotechnie Programme (UCEP). The AEN provides a forum to promote communications between individuals and organizations who are working on unique initiatives throughout Asia to create livelihood opportunities for the poor and the marginalized and to protect the biodiversity so integral to rural prosperity. The goal of the network is to strengthen innovative models already in place while catalyzing their adaptation and dissemination regionally. To this end, the organizing principle of the AEN is to "think, plan and act locally and support nationally and globally." In addition to the network focal point at the M.S. Swaminathan Research Foundation (MSSRF) in Chennai, India, national focal points will be established in individual Asian countries for the development of national networks. These national networks will then feed into the larger AEN.[30]

Young professionals are involved in training and disseminating information to communities.

WWW Address: http://www.mssrf.org/aeis/aen.html

Contact Information:
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Third Cross Road, Taramani Institutional Area, CPT Campus
Chennai (Madras) 600 113
India

Tel: +91 44 235-1698, 235-0698
Fax: +91 44 235-1319
E-mail: general@mssrf.org

Bellanet

Bellanet is an international initiative with a mission to increase the impact of development activities through greater collaboration. Not a knowledge network, *per se*, Bellanet works to help strengthen the capacity of donors and partners in the South to use information and communications technologies for collaboration. They identify and solve problems hindering effective collaboration, as well as share and apply lessons learned and best practices from past

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[30] M.S. Swaminathan Research Foundation, 1999. Asian Ecotechnology Network. On the Internet at: http://www.mssrf.org/aeis/aen.html

collaborations. Essentially, Bellanet helps others develop their own knowledge networks. Among the services Bellanet offers its partners are the following: web-based workspaces offering discussion lists, databases and other resources; advice on ICT policies for organizations and collaborations; implementation of projects in the South on behalf of donors; user-friendly information management solutions; assessment of ICT impacts; and seminars and training.[31]

Bellanet is governed by the Bellanet International Steering Committee, whose membership is drawn from the institutions that provide core funding. The initiative itself is implemented by a Secretariat located in Ottawa.[32]

Young professionals are employed within Bellanet.

WWW Address: http://www.bellanet.org/

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Canadian Model Forest Network

The Government of Canada, through the Canadian Forest Service, launched the Canadian Model Forest Network in June of 1992.[33, 34] The original network consisted of 10 model forest sites, representing six of the main forest regions of Canada. Within each model forest, partnerships are

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[31] Bellanet, 1999. About Bellanet. On the Internet at: http://www.bellanet.org/B_index.cfm?menu_id=2
[32] *Ibid*.
[33] The Canadian Model Forest Network, 1999a. About the Canadian Model Forest Network. On the Internet at: http://www.modelforest.net/e/home_/aboute.html
[34] The Canadian Model Forest Network, 1999b. Canadian Model Forest Network Milestones. On the Internet at: http://www.modelforest.net/e/home_/abou_/historye.html

formed between individuals and organizations that share the common goal of sustainable forest management. These partners share their knowledge and combine their expertise and resources to develop innovative, region-specific approaches to sustainable forest management. The management techniques developed are then researched, developed, applied and monitored within the model forest, a working scale land base where participants have a direct interest and influence over the use of the forest. The result of this grassroots approach is solutions that work and earn local support.[35]

Although research and innovation is taking place in each of the model forests, many of the lessons learned locally can be transferred to other forest regions within Canada and the world.[36] Now in Phase II of the program, the Canadian Model Forest Network is placing greater emphasis on working together as a network with greater participation in activities and the sharing of more knowledge at the network level.[37] National level programs have been established to allow model forests to come together and share their own unique perspectives. These national projects are being managed and implemented by a committee of representatives from each model forest.[38]

The model forest program has also expanded into an International Model Forest Network. An International Model Forest Secretariat has been established in Ottawa and model forests have been set up in Mexico and Russia and are being developed in Argentina, Malaysia, China, Japan and Vietnam. Worldwide, network members communicate via e-mail, as well as through large national and international conferences. The results of network research are disseminated through the International Model Forest web site, as well as a published compendium of all projects conducted in the Canadian and International Model Forests.[39]

The Model Forest Network has a Youth Board of Directors.

WWW Address: http://www.modelforest.net/e/home_/indexe.html

Contact Information:

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Fax: +1 (613) 992-5390
e-mail: jpugin@nrcan.gc.ca

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[35] The Canadian Model Forest Network, 1999c. Partnerships for Better Forest Management. On the Internet at: http://www.modelforest.net/e/home_/abou_/partnere.html
[36] The Canadian Model Forest Network, 1999d. Model Forest Network Initiatives. On the Internet at: http://www.modelforest.net/e/home_/abou_/initiate.html
[37] The Canadian Model Forest Network, 1999b.
[38] The Canadian Model Forest Network, 1999d.
[39] The Canadian Model Forest Network, 1999e. Model Forests Throughout the World. On the Internet at: http://www.modelforest.net/e/home_/internae.html

Centre for Human Settlements

The Centre for Human Settlements (CHS) is a unit within the School of Community and Regional Planning at the University of British Columbia. CHS faculty and student associates from various departments conduct multi-disciplinary research and capacity building programs related to regional, urban and community development. CHS was established following the 1976 United Nations Conference on Human Settlements, Habitat I, held in Vancouver. In 1990, CHS was named a "Centre of Excellence" in human settlements planning by the Canadian International Development Agency.[40]

Currently, faculty associates at CHS are undertaking policy-oriented research on healthy and sustainable communities, rural-urban linkages, metropolitan governance, disaster preparedness, risk analysis and participatory planning. They are also working on three major capacity-building projects which focus on water management in China, planning school development in Sri Lanka and localized planning for poverty reduction and infrastructure in Vietnam. The latter involves the development a knowledge network of recently established Centres for Poverty Reduction throughout Vietnam. This network was examined closely and is discussed in depth below.

Graduate Students are involved in the research of the network

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The Founders' Network

The Founders' Network links the diverse group of individuals from academic, private and public sectors across Canada and in other countries who contributed to the founding and development of The Canadian Institute for Advanced Research (CIAR), in order to encourage continued application of the knowledge coming out of the work of the Institute. Of particular interest are how new concepts of economic growth and social change affect determinants of health and human development, particularly as they relate to early childhood and the life cycle.

Graduate students are involved in the research of the network.

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[40] Centre for Human Settlements, 1999. About the Centre for Human Settlements. On the Internet at: http://www.interchg.ubc.ca/chs/chsabout/htm

WWW Address: http://www.founders.net/web/foundershome.nsf

Contact Information:
The Founders' Network
401 Richmond Street W., Suite 281
Toronto, Ontario, Canada
M5V 3A8
Tel: +1 (416) 593-5999
e-mail: info@founders.net

Global Network of Players

The Global Network of Players (GNP) is only just beginning to develop. Started in 1999 by Marcin Jakubowski, a graduate student at the University of Wisconsin, this network is meant to connect graduate students from around the world to work on issues of sustainable development. Thus far, the network consists of approximately 15 people, 10 of which are from outside of the United States. At this stage, the network is loose and none of the participants are bound by a formal agreement. They are currently working to establish a joint vision and to develop a set of projects on which they can work together. There are also tentative plans to hold a conference at some time in the future so that participants can meet and work face to face.

The founder of the network is a young professional; youth are direct beneficiaries of the work.

Contact Information:
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Planet Xpress

Planet Xpress is a recently created, innovative web site project being developed to give support and encouragement to young people interested in global issues. The project is the brainchild of a 19-year-old Scottish girl named Amy Saunders. It was developed in direct response to the need for a web site *for* youth *by* youth, which contains inspiration, contacts, resources and advice on global issues. The site is a forum for youth expression and aims to establish a global community of young people sharing advice, ideas and support. It contains a virtual newspaper documenting worldwide youth action and ideas, practical advice pages and direct e-mail links to groups and individuals featured on the site. There are also plans to establish a worldwide information network through a global contacts site and a site on activities and opportunities with links and information on accredited youth and environmental groups around the world.[41]

The project is being managed by young people from each of the six regions of the world to ensure that information contained on the site appeals to young people and is sympathetic to the needs of youth around the world. A system of youth satellite outreachers, web designers,

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[41] Amy Saunders, 1999. Personal Communication.

contributors and translation teams is also being established to implement marketing and outreach strategies which encourage young people to contribute and use the site.

The web site project is currently being sponsored by the Global News Education Trust,[42] however, the project coordinators are still looking for additional funding, as well as a permanent location to establish a Secretariat.[43] In the future, the organization plans to translate the site into Spanish and French, and to establish "mini" virtual newspapers for separate countries that would highlight specific problems and increase young peoples' awareness of other cultures. They also want to publicize the concerns and initiatives of youth throughout the world media by forging partnerships with media groups (newspapers, TV, Radio).[44]

The founder of the network is a young professional; youth are direct beneficiaries of the work.

WWW Address: http://www.planetxpress.org/

Contact Information:
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Global News Education Trust
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Clun
Shropshire, England
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Sustainable Development Communications Network

The Sustainable Development Communications Network (SDCN) grew out of Spinning the Web, a project that started in August 1996 as a joint effort between the International Development Research Centre (IDRC) and the International Institute for Sustainable Development (IISD). It is a group of leading non-governmental organizations working together to find ways of using the Internet to meet the goals of sustainable development.[45] The purpose is to improve the knowledge base for governance and decision-making around the world by increasing global awareness of and access to the knowledge held by southern organizations on the links among environmental, social, economic and security issues. Since the network includes a number of northern institutions, it also contributes to the creation of a new model of international co-operation and development based on knowledge sharing.[46] Members in the SDCN co-operate to develop new tools and content about sustainable development; build

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[42] Planet Xpress, 1999. Welcome. On the Internet at: http://www.planetxpress.org/pages/home.htm
[43] Amy Saunders, 1999. Personal Communication.
[44] Amy Saunders, 1999. Personal Communication.
[45] International Institute for Sustainable Development, 1999. Sustainable Development Communications Network. On the Internet at: http://sdgateway.net/noframe/project.htm
[46] International Institute for Sustainable Development, 1998. Proposal: Development of the "Spinning the Web" Knowledge Network - Phase II.

capacity for using electronic communications more effectively; promote member information; and share experiences about managing sustainable development communications.[47]

The network is funded by IDRC and the Canadian International Development Agency (CIDA) and consists of a core group of seven key organizations working in sustainable development around the world: the Regional Environmental Center for Central and Eastern Europe (Hungary), Fundacion Ambiente y Recursos Naturales (Argentina), Environnement et développement du tiers monde (Senegal), Development Alternatives (India), the Earth Council (Costa Rica), Stockholm Environment Institute (Sweden) and IISD. These core members participate in network decision-making processes, set the work plan for the network and plan and participate in collaborative projects. In addition to core members, the network is currently trying to recruit four associate members[48] who will plan and participate in collaborative projects, as well as affiliate members who will be actively encouraged to participate in the network by sharing their experiences with sustainable development initiatives communications.[49]

SDCN operates as a formal knowledge network and has a Network Governance Accord in place that has been signed by the core members. The network has its Network Co-ordination Unit at IISD in Winnipeg, Manitoba.

Young professionals are employed within the SDCN. They also have an international internship program whereby young people from Canada are sent to the various partner organizations in the SDCN to work for six months.

WWW Address: http://www.iisd.org/networks/sdcn.htm

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Tel: +1-204-958-7727 / 958-7720
Fax: +1-204-958-7710
E-mail: sdcn@iisd.ca

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[47] International Institute for Sustainable Development, 1999. Sustainable Development Communications Network. On the Internet at: http://sdgateway.net/noframe/project.htm
[48] Terri Willard, SDCN Network Co-ordination Unit, International Institute for Sustainable Development. Interview on November 10, 1999.
[49] International Institute for Sustainable Development, 1999. Sustainable Development Communications Network. On the Internet at: http://sdgateway.net/noframe/project.htm

Sustainable Forest Management Network

The Sustainable Forest Management Network (SFMN) is a national research network focused on forest management. It is one of Canadian Centres of Excellence and is operated out the University of Alberta in Edmonton, Alberta.[50] The network consists of partners from universities, industry and government.[51]

The SFMN examines new approaches to forest management that can maintain Canada's forest based-economy without compromising biodiversity and ecological goals. The four main theme areas of the network are: Ecological Basis of Sustainability; Planning and Practices; Socioeconomic Sustainability; and Minimum Impact Technologies. The theme areas are meant to interact with one another to provide the linkages between ecology, forest practices, processing and pollution control technology and social and economic development that are necessary to develop new approaches to forestry and new forest policies.[52]

The research within the network is done by graduate students working towards master's and doctoral degrees.

WWW Address: http://lipsey.re.ualberta.ca/sfm.htm

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Trade Knowledge Network

The Trade Knowledge Network (TKN) is part of a larger collaborative project between the International Institute for Sustainable Development (IISD) and the World Conservation Union (IUCN) to build capacity on the issues of trade and sustainable development in developing countries. The aim of this project is to increase awareness, knowledge and understanding about trade and sustainable development among developing country research institutions, non-governmental organizations and governments.[53]

The TKN links the research partners with each other and acts as a clearing house for developing country research on trade and sustainable development issues. The TKN web site provides

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[50] Sustainable Forest Management. A New Network of Centres of Excellence Centred at the University of Alberta. On the Internet at: http://lipsey.re.ualberta.ca/sfm.htm
[51] Vic Adamonowicz, Sustainable Forest Management Network, University of Alberta. Interview on November 29, 1999.
[52] *Ibid.*
[53] Trade Knowledge Network, 1999. Overview and Updates. On the Internet at: http://www.iisd.org/tkn/project.htm

access to country-level case studies written by network members and is used by members to publicize their new and existing research and to collaborate on research. Network partners receive training and assistance, according to their needs, to allow them to maintain web pages containing their own work, and to access the work of others.[54]

Currently, the TKN consists of six research organizations located in five developing countries, namely Programa Salvadorño de Investigación sobre desarrollo y Medio Ambiente (PRISMA) in El Salvador, Centro de Investigaciones para la Transtormación (CENIT) in Argentina, the Policy Research Centre for Environment and Economy in China, the Trade and International Policy Secretariat (TIPS) in South Africa, and the Sustainable Development Policy Research Institute (SDPI) in Pakistan. IISD acts as the network coordination unit, coordinating the activities of the TKN and maintaining the TKN web site.[55] The network is funded by the International Development Research Centre (IDRC), IISD and the IUCN.[56]

The TKN has an international internship program whereby, young people from Canada are sent to the partner organizations to work for six months. Some TKN members have expressed a desire for programs that would allow them to build the capacity of their own young professionals.

WWW Address: http://www.iisd.org/tkn/

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Fax: +1 (204) 958-7710
e-mail: info@iisd.ca

Vietnamese Network of Centres for Poverty Reduction

The Vietnamese Network of Centres for Poverty Reduction is being created as part of the "Localized Poverty Reduction in Vietnam" program centred at the University of British Columbia. The goal of this initiative is to build the capacity of partner institutions in Vietnam to develop and teach low-cost, participatory policy assessment and project planning methods.[57]

The lead Canadian institution for this program is the University of British Columbia through the Centre for the Human Settlements, the Centre for Research in Women's Studies and Gender Relations and the Centre for Southeast Asian Research, Institute for Asian Research. The program, which runs from 1998 to 2003, will establish Centres for Poverty Reduction at each of

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[54] *Ibid.*

[55] *Ibid.*

[56] Trade Knowledge Network, 1999. Trade Knowledge Network. On the Internet at: http://www.iisd.org/tkn/

[57] Localized Poverty Reduction in Vietnam, 1999. Program Overview. On the Internet at: http://www.interchg.ubc.ca/chs/lprv/

eight Vietnamese academic partner institutions. These Centres will then be linked together via the Internet to form an internationally associated, self-sustaining Vietnamese network for localized poverty reduction.[58]

They place young Canadians with their partner organizations for six–eight-month internships.

WWW Address: http://www.interchg.ubc.ca/chs/lprv/

Contact Information:

LPRV Director
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4th Floor, 2206 East Mall
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Tel: +1 (604) 822-4155
Fax: +1 (604) 822-6164

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[58] *Ibid.*

Appendix 3: List of Interview Participants

Name	Organization	Network	Role in the Network	Youth or Adult
Vic Adamowicz & Fiona Salkie	University of Alberta	Sustainable Forestry Management Network	Faculty Team Leader, Socioeconomic Sustainability Theme / Student Research Coordinator	Adult/Adult
Chris Buddle	University of Alberta	Sustainable Forest Management Network	PhD. Student	Youth
Koben Christianson	Swedish Environment Institute (SEI)	Sustainable Development Communications Network	Intern/Employee	Youth
Howard Clark	York University		Expert in Knowledge Networks. Author - *Formal Knowledge Networks: A Study of Canadian Experiences*	Adult
Aaron Cosbey	International Institute for Sustainable Development, Canada	Trade Knowledge Network	Manager	Adult
Heather Creech	International Institute for Sustainable Development (IISD)	Sustainable Development Communications Network (SDCN)	Director	Adult
Norma Dryden	Long Beach Model Forest	Canadian Model Forest Network		Adult
Dr. Penny Gurstein	University of British Columbia	Centre for Human Settlements, a CIDA Centre of Excellence	Chair	Adult
Cary Hamel	University of Manitoba	Sustainable Forestry Management Network	Student	Youth
Katherine Hay	Development Alternatives (DA), India	Sustainable Development Communications Network (formerly Spinning the Web)	Intern. Developed a Sustainable Livelihoods for modules DA and the network	Youth
Joan Hubbard	World Bank	Global Knowledge Partnership	Global Knowledge Partnership Secretariat	Adult
Marcin Jakubowski	University of Wisconsin	Global Network of Players	Founder	Youth
Popi Kleinman	Fundación Ambiente y Recursos Naturales (FARN) in Argentina	Sustainable Development Communications Network (SDCN)	Webmaster and Internet Communications Officer for FARN	Youth
Shady Konfi	International Research and Development Centre (IDRC)	Bellanet	Program Officer	Youth
Dr. J. Fraser Mustard	Canadian Institute for Advanced Policy Research (CIAR)	Founders' Network	Founding President and Fellow of CIAR	Adult
Rolando Ploit	Fundación Ambiente y Recursos Naturales (FARN) in Argentina	Sustainable Development Communications Network (SDCN)	Intern	Youth

Name	Organization	Network	Role	Category
Gabor Reves	Regional Environment Center for Central and Eastern Europe (REC)	Sustainable Development Communications Network (SDCN)	Internet Communications Officer and REC's Network Representative for the SDCN	Youth
Herman Rosa	Programa Salvadoreño de Investigación sobre Desarrollo y Medio Ambiente (PRISMA)	Trade Knowledge Network	Organization Director	Adult
Amy Saunders		PlanetXpress	Founder	Youth
Jamie Schnurr	International Research and Development Centre (IDRC)	Africa Youth Livelihoods Knowledge Network	Research Specialist, Youth Livelihoods & Network Secretariat Coordinator	Adult
M S Swaminathan	M.S. Swaminathan Research Foundation (India)		Founder/Expert in Knowledge Networks	Adult
Frank Tulus	Development Alternatives (DA), India/International Development Research Centre (IDRC)	Sustainable Development Communications Network (SDCN)/Pan-Asia Network	Intern/Employee	Youth
Julie Vaudrin-Charette	ENDA, Senegal	Sustainable Development Communications Network (formerly Spinning the Web)	Intern. Developed a Sustainable Livelihoods module for ENDA and the network	Youth
Vince Verlaan	University of British Columbia – Centre for Human Settlements	Network of Vietnam Centres for Poverty Reduction	Researcher	Adult
Terri Willard	International Institute for Sustainable Development, Canada	Sustainable Development Communications Network (formerly Spinning the Web)	Network Coordinator	Youth

Appendix 4: Interview Questions

1. How do you define a knowledge network? What do you see as its important features?

2. What is the purpose/function of the KN with which you are involved?

3. How old is the KN?

4. How many partners are involved in your KN and where are they located?

5. How do the partners within the KN communicate with one another? Do they meet regularly or converse only through e-mail?

6. Who is responsible for collating the information and creating the "knowledge" documents that come out of the KN?

7. How are these documents/reports disseminated? Are they print or electronic?

8. How many young professionals do you estimate are contributing to your knowledge network? These may be interns or employees and may be contributing to the knowledge generation of the network or looking after technical aspects.

9. How many of these individuals are paid, full-time, part-time, contract, interns, volunteers, etc.?

10. What roles do these young professionals play within your KN?

11. What do you perceive as the benefits of having young professionals involved in KNs for:
    - the young professional?
    - the implementing organization?
    - the network?

12. Do you think there are any disadvantages to having young professionals involved in the KN? For example, if they are interns, is the high turnover of individuals actually detrimental to the functioning of the network?

13. What opportunities do these young professionals have to participate in the decision making of the network?

14. Do you think the employment prospects of young professionals are enhanced as a result of participating in a KN?

15. How do you think the role of young professionals working in knowledge networks could be strengthened?

16. Do you think that young professionals face obstacles to participation in KNs? If yes, what are they?

17. How do you think effective youth participation in KNs, in general, could be increased? In your answer, please consider the role of implementing organizations, governments and institutions, as well as the role of youth.