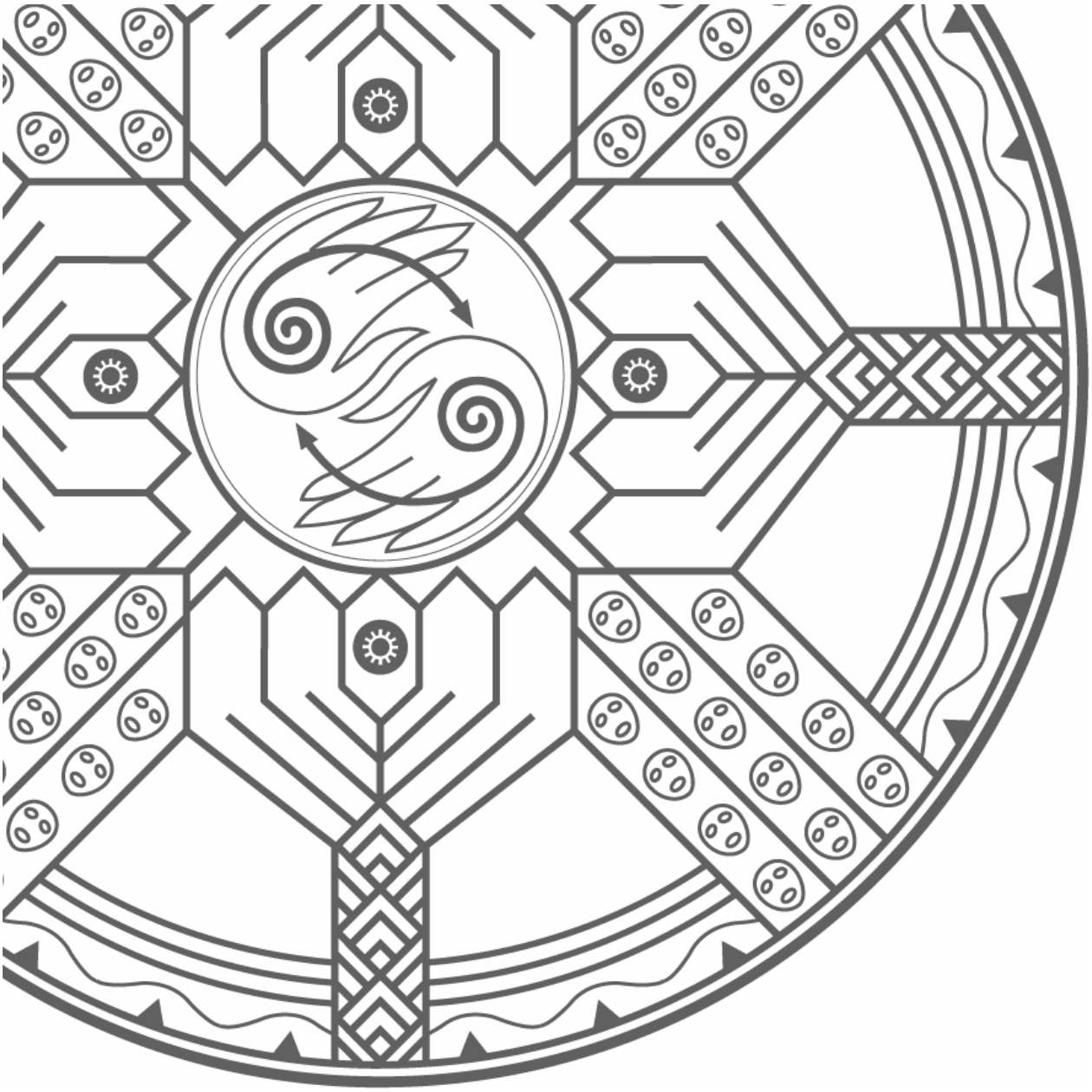

Strategic Intentions:
Principles for Sustainable Development Knowledge Networks

Heather Creech

IISD
INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT
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International Institute for Sustainable Development
161 Portage Avenue East, 6th Floor
Winnipeg, Manitoba
Canada R3B 0Y4
Tel: +1 (204) 958-7700
Fax: +1 (204) 985-7710
E-mail: info@iisd.ca
Internet: http://www.iisd.org/

Table of Contents

Strategic Intentions: Principles for Sustainable Development Knowledge Networks

I. Introduction

There is a fundamental gap in the current practice of networking. At present, most organizations are experimenting with models of collaboration for the sharing of information and expertise:

> *There is a growing understanding and acceptance of the value of new research models that stress partnerships, alliances and networks ... there is an emerging trend toward networking resources and focusing them in thematic ways.*[1]

Many researchers are beginning to investigate the value of these models as a means of changing public and private sector actions to be more supportive of sustainable development. But we continue to see organizations struggle with the problem of working together to increase their collective effectiveness, not just to achieve their immediate research objectives but to fulfill their vision of having real influence on decision-making for sustainable development.

The gap lies in the limited understanding about how to conceptualize, develop and follow through on the strategic intentions of a network. Networks are generally understood to be a "combination of persons [or organizations], usually dispersed over a number of geographically separate sites, with appropriate communications technology"[2] to link them. But networks often seem to fail to fulfill their promise. Research may be carried out and members may meet from time to time to exchange experiences, but at the end of the day, there is often no indication that the interaction added value to individual research projects, no truly joint, collaborative projects were carried out by two or more members in the network, and no demonstrable sign that decision-makers read or used the research and advice emerging from the networks. We think the way to bridge this gap is to approach networking with a view not just to strengthening knowledge management and sharing among organizations, but focusing on the engagement of decision-makers who are to be the targets and recipients of the work of the network. There is a need to be more strategic in the choice of partners and in the management of the way they work together in order to keep on-mission and on-message to decision-makers. There is a need to reduce the transactional costs of collaborative work that often delay the attainment of the network's intentions. And finally, there is a need to find new ways to monitor network efficiency and effectiveness.

This paper is an overview of one model of networking in which we have observed greater emphasis on strategic intention — the formal knowledge network. We see in this model a

[1] The Impact Group, *Strengthening Environmental Research in Canada* (Ottawa: Discussion Paper prepared for Environment Canada, 2000), p.19.
[2] Howard Clark, *Formal Knowledge Networks: A Study of Canadian Experience* (Winnipeg: IISD, 1998), p. 1.

more structured and outcome-oriented approach than some other models for collaboration. In this overview, we briefly examine the following:

a) the drivers behind the growth of interest and experimentation with networks;
b) the different types of knowledge and their relevance for knowledge networks;
c) the range of collaboration models available for sharing, aggregating and creating of knowledge;
d) the formal knowledge network as a separate and distinct approach;
e) the operating principles for formal knowledge networks; and
f) a synopsis of the basic components for formal knowledge networks.

Additional working papers have been prepared which provide more detail on the basic components of formal knowledge networks. These papers include:

- Dating the decision-makers: Moving from communications to engagement strategies
- Form follows function: Management and governance of knowledge networks
- Helping knowledge networks work
- Measuring while you manage

The evolution of our interest in knowledge networks is described in Appendix 1.

II. Drivers behind the emergence of networks

Networking has been in existence from the day that people began to create organizational structures. Networks and networking have served as a means of sharing information for competitive and cooperative reasons among organizations and individuals with common interests. In the last 10 years, however, there has been a surge of experimentation with network models for fast-tracking sustainable development. What have been the drivers behind this explosion of networks?

The driver most commented upon has been the emergence of information and communications technologies (ICTs) in the 1980s and 1990s to support and strengthen networks. ICTs have made it possible for individuals in networks to exchange information, work collaboratively and share their views more broadly. That being said, there are other, stronger and more important drivers behind individuals and organizations making use of the technologies to create networks.

Sense of urgency

All sectors and regions have recognized "the growing complexity and inter-relatedness of major social, economic and environmental problems"[3] and "the failure of narrow approaches to solve some of the more pressing issues of poverty alleviation, environmental degradation and social breakdown."[4] New models are

[3] Impact Group, p. 19.
[4] Vangile Titi, *Building Partnerships for Sustainable Development,* Working Paper (Winnipeg: IISD, 1993), p. 3.

needed to catalyze and fast-track innovation, research and development, and the realization of economic, environmental and social benefits.

Sense of frustration

In public and academic institutions, there is a growing concern about the marginalization of many research endeavours and the lack of impact that research, in particular scientific research, has had on public policy.[5] As was noted in the 1996 report, "Connecting with the World" by the Maurice Strong Task Force, "the problem is not always a lack of information…the problem is inadequate capacity to …translate it into useful policy and appropriate action."[6] Networks have the potential to achieve a critical mass of expertise that has more influence than individual institutions can bring to bear on policy development.

Openness to private sector experience

Public sector and civil society organizations are intrigued with private sector experiments in "knowledge management" as an integral part of organizational efficiency. Knowledge management has been defined as "effectively connecting those who know with those who need to know, and converting personal knowledge into organizational knowledge."[7] The private sector upsurge in network models, strategic alliances and business to business (B2B) applications would not have developed without going through knowledge management processes — coming to an understanding of core competencies and sources of expertise within individual enterprises. Only then is it possible to look outwards to find complementary sources of expertise in other enterprises. Public sector and civil society organizations are now going through similar exercises to define who they are and what they do. And, as they come to better understandings of how to undertake knowledge management within their organizations, they have begun to ask questions about how to connect internal knowledge systems in one organization with systems at other organizations; and how to use these emerging systems and processes not only to manage what they know, but to create and share new knowledge and put it into action.

III. Explicit, tacit and implicit knowledge

Some clarity is required in our use of the term "knowledge," in relation to its relative "information". There is a rich debate in knowledge management literature on the distinctions among explicit, tacit and implicit knowledge (not to mention declarative, procedural and strategic knowledge). Most explanations revolve around what can be written down or made explicit in some fashion, and what cannot easily be recorded or shared.[8] However, few explanations in western management literature bring into the

[5] Meeting of the Canadian Environmental Sciences Network, Ottawa, 26 January 2001.
[6] Maurice Strong Task Force, *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, 1996), p. 6.
[7] "A survey of E-management", *The Economist*, 11 November 2000, p. 20.
[8] J. Cortada, J. Woods, eds., *The Knowledge Management Yearbook 2000-2001*, <http://www.cwlpub.com/nickolsarticle.htm>.

debate individual cultural backgrounds, values and perceptions. We have, therefore, based our understanding of explicit, tacit and implicit knowledge upon the distinctions developed by Bellanet,[9] as being the most appropriate for the international sustainable development network context.

Explicit knowledge (that which is written down, recorded or codified in some manner) is often used almost interchangeably with information in the knowledge management / knowledge network context. The mapping and sharing of knowledge focuses primarily on individual explicit knowledge and its relation to organizational explicit knowledge (more commonly known as "corporate memory"). In moving towards collaborative work processes, organizations often begin with knowledge mapping or knowledge elicitation, reviewing the intellectual capital of the organization (reports, manuals, etc.), identifying expertise within the organization, identifying gaps in the corporate knowledge base and recording these in a systematic way. In a network, this process of capturing and aggregating the explicit knowledge of individuals and organizations is in itself a significant task. It creates the basis upon which a network can begin to work together and catalyze new ideas.

However, our model of a formal knowledge network is grounded not just in the sharing and aggregation of existing explicit knowledge among organizations, but in the creation of new knowledge and the effective application of that knowledge. An appreciation of tacit and implicit knowledge is also necessary as part of establishing and running a formal knowledge network.

Tacit knowledge is the understanding of how to do things. It is created by doing, by personal trial, error, reflection and revision (understanding how to research and develop new policy recommendations, learning how to run a community consultation or how to negotiate a policy change with a decision-maker), but it is difficult to articulate what that "how to" actually is. The transfer of tacit knowledge is, therefore, through shared processes (working together, mentoring, and so forth) in addition to the physical transmission of written or recorded content. In a network context, creating and sharing tacit knowledge requires collaborative work techniques together with the establishment of long-term relationships and trust, both among the participants in the network and with those who will implement the research findings.

Finally, implicit knowledge refers to an individual's "contextual surroundings … that are imbued with and shape [his or her] collective values, normative behavior, roles, customs, … expectations of events" [10]— in short, an individual's culture and values. Most people understand the challenges of cross-cultural communications when bringing individuals from different organizations together in a network. More importantly, however, the network participants must also recognize the implicit knowledge norms of those they

[9] *Knowledge Management: Implications and applications for development organizations*, Key terms and definitions, Bellanet, <http://www.bellanet.org/km/main/glossary.html>.
[10] *Knowledge Management: Implications and applications for development organizations*, <http://www.bellanet.org/km/main/glossary.html>.

wish to influence in order to transfer the knowledge from the network to the decision-maker more effectively:

> "Social learning and effective change cannot be imposed from outside. Indeed, the attempt to impose change from the outside is as likely to engender resistance and barriers to change as it is to facilitate change. At the heart of development is a transformation in ways of thinking…"[11]

In other words, presenting a network report to a decision-maker may not have the desired effect, in part because the decision-maker has not been part of the tacit knowledge development process (learning by doing), and in part because the implicit knowledge of the decision-maker (vision, values, culture) may present obstacles to the acceptance of the report's observations and recommendations. A large portion of our research on knowledge networks therefore focuses on how to engage decision-makers, how to communicate network findings more effectively, and how network members can work together in order to create new knowledge and have stronger impacts and outcomes.

IV. Different models for collaboration

The term "knowledge network" is often used as a blanket descriptor for a variety of collaboration models. However, there are a number of important distinctions between our emerging model of a formal knowledge network and other models of institutional collaboration. There are, of course, many hybrids of these basic models, and best management practices for one model can well serve to strengthen other collaborative approaches.

Internal knowledge management networks

These networks evolve through the thematic mapping of expertise within an organization, combined with the creation of appropriate environments for knowledge sharing. Their purpose is primarily to maximize the application of individual knowledge to meet organizational objectives. These networks are largely internal, although they may cross national boundaries.

Strategic alliances

In the private sector, these alliances are "long-term purposeful arrangements among distinct but related organizations that allow those firms to gain or sustain competitive advantage vis-a-vis their competitors outside the network."[12] A true adoption of the private sector model by civil society organizations would involve real value appropriation (money, time and influence) among the partners in the network. Each partner must ask itself how this alliance will further its competitive advantage and strengthen its position in the marketplace of ideas. Partners do not

[11] J. Stiglitz, "Scan globally; reinvent locally: Knowledge Infrastructure and the localization of knowledge", *D+C Development and Cooperation*, No. 4, (July/August 2000), pp. 8-11, Posted at <www.dse.de/zeitschr/de400-3.htm>.

[12] C.J. Jarillo, *Strategic Networks — Creating the Borderless Organization* (Oxford: Butterworth-Heinemann, 1993)

necessarily need to have equal status in the relationship; alliances can function with a dominant partner or partners. Strategic alliances are usually built one partner at a time.

Communities of practice

Howard Clark, in the IISD report Formal Knowledge Networks: a Study of Canadian Experience, made a number of observations about "informal networks" which are relevant to communities of practice. Two or more individuals can create a community of practice for conversation and information exchange, possibly even leading to the development of new ideas and processes. Participation is purely voluntary and will wax and wane with the level of interest of the participants.[13] Communities of practice primarily build capacity. They attract individuals who are willing to share their expertise in exchange for gaining expertise from others. The principal driver is the desire to strengthen their own skills for their own objectives, more than a desire to work together on common challenges.

John Brown, in The Social Life of Information, makes a further distinction between communities of practice and networks of practice[14] — the latter being even more informal. Members rely largely on communicating through bulletin boards, web sites and listservs — posting information and queries but rarely interacting or collaborating directly with one another.

Networks of experts

These networks bring together individuals rather than organizations; the invitation to join is based on observed expertise in a particular area.

Information networks

These networks primarily provide access to information supplied by network members, occasionally with overlays of interpretative materials which organize content thematically. However, they are fundamentally passive in nature — users must come to the network, physically or electronically, to benefit from the work of the network.

Formal knowledge networks

A formal network tends to be more focused and narrowly-based than information networks; more cross-sectoral and cross-regional than internal knowledge management networks, involving more partners than some strategic alliances, and more outward-looking than communities of practice. Its strengths lie in its productivity and its impact on individual or groups of decision-makers; its current weakness lies in the lack of communicating research with broader audiences.

The following table provides several examples of these different models of collaboration.

[13] Clark, p. 9.
[14] John Brown and Paul Duguid, *The Social Life of Information (* Boston: Harvard Business School Press, 2000), pp. 141-142.

Table of collaboration models

Type	Group	Description
Internal knowledge management networks		
	CIDA (Canadian International Development Agency)	Scope: CIDA's internal thematic networks bring together CIDA staff throughout the organization. Each network has a specific scope of interest, some also have workplans for research and other activities. Membership: CIDA staff only at present; however, CIDA is currently exploring the connection of these internal networks with external institutions, experts and networks. Structure: In general, ad hoc committee structure. Communications: Internal to CIDA only.
	United Nations Development Program: Global Hub/SURF system	Scope: Tracks the expertise of staff in the UNDP field offices around the world. Membership: UNDP staff only. Structure: Managed through a central computer portal and email query system. Communications: Internal to UNDP only.
Strategic alliances		
	Global Responsibility and the International Institute for Sustainable Development	Scope: An alliance to add value to Global Responsibility's Communications Platform which captures corporate social and environmental reporting, by integrating with IISD's business web site which holds tools for improving sustainable development practices in business; also to combine mutual interest in business-NGO relations. Membership: Only IISD and Global Responsibility at present. Structure: Governed by memorandum of understanding. Communications: Web sites will be open to the public; annual Forum with business/NGO leaders to present and discuss issues of common concern.
Communities of practice		
	SD Webworks	Initiated by IISD and the Sustainable Development Communications Network. Scope: Forum on the Web to raise questions and exchange information about best practices in using electronic media to communicate sustainable development. Membership: Open to all interested practitioners. Structure: Informal. Communications: Interactions posted on web site, open to the public.

Type	Group	Description
	GKD (Global Knowledge Dialogue)	Initiated by the Global Knowledge Partnership. Scope: Forum on the Web to discuss all aspects of knowledge for international development. Membership: Open to all interested practitioners. Structure: Actively moderated. Communications:. Interactions posted on web site, open to public.
Networks of experts		
	Consultative Group on Sustainable Development Indicators	Initiated by IISD. Scope: The Group is working to develop aggregated indices for sustainable development. Membership: Individual members rather than organizations; by invitation; based on their reputations and expertise in the field. Structure: IISD serves as Secretariat; regular meetings; regular e-mail interaction on closed list. Communications: Results of work posted on web site; open to the public; strategic promotion of research findings to selected key institutions (ex. UN Department for Economic and Social Affairs); interactions of the group private.
Information networks		
	Development Gateway	Initiated by the World Bank. Scope: A central portal site on the Internet which links a growing number of country gateways to local development information and provides additional thematic content on a wide range of development issues. Membership: Organizations managing country gateways; other levels of participation under review at present. Structure: Under review at present Communications: Gateway open to the public.
	OneWorld International	Scope: Full range of social justice and environmental issues. Membership: Network of OneWorld Centres; members of centers are non-profit organizations sharing the vision and values of OneWorld. Structure: OneWorld International is wholly-owned by OneWorld International Foundation; see http://www.oneworld.org/about/governance/ . Communications: Web site open to the public.

Type	Group	Description
	PAN (Pan Asia Networking)	Initiated by the International Development Research Centre. Scope: IDRC's program to build Internet capacity with development organizations in Asia; to provide a central portal to link member sites. Membership: Service partners and content partners which have been supported through IDRC grants; e-commerce partners are development organizations wishing to sell products and services through the central portal. Structure: Managed as an IDRC Program Initiative. Communications: Web site open to the public; PAN membership includes category for PAN policy-makers. These are policy-makers on ICT issues who facilitate, impact and are influenced by the work of PAN: they are part of PAN's target client group.
Formal networks		
	CCKN (Climate Change Knowledge Network)	Initiated by IISD. Scope: Policy research on key climate change themes such as vulnerability and adaptation, renewable energy and the Kyoto mechanisms; training in the negotiating process. Membership: Selected developed and developing country research institutes with expertise in climate change; by invitation. Structure: Governance agreement; Network Coordination Unit hosted by IISD. Communications: Network web site; training workshops; policy advice to target decision-makers.
	GDN (Global Development Network)	Initiated by the World Bank Scope: support and link research and policy institutes involved in the field of development Membership: 7 regional development networks and their members Structure: now an independent, incorporated organization with its own board of directors. Communications: GDN web site and email lists open to public; research competitions and development awards

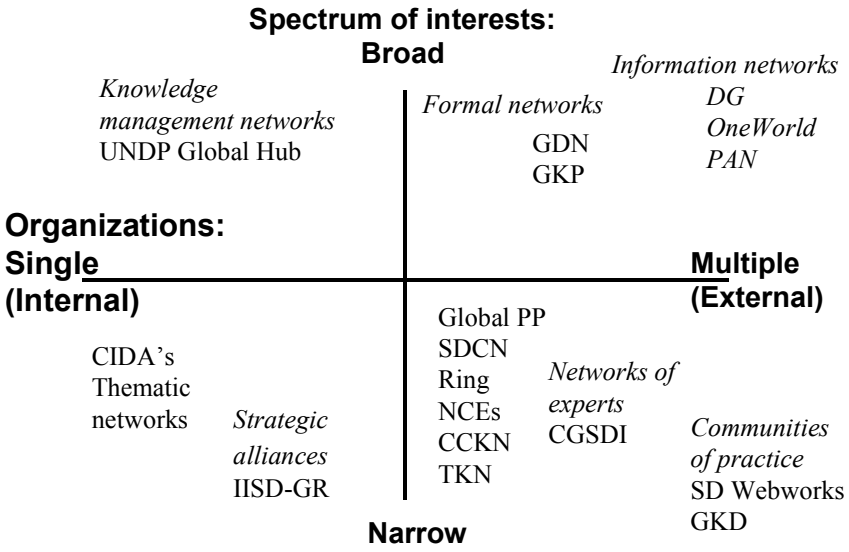
Type	Group	Description
	Global Knowledge Partnership	Initiated by the World Bank, CIDA and other organizations Scope: brings together all organizations (including the private sector) working on knowledge for development, including innovative uses of information technology Membership: open to organizations and businesses working on knowledge for development issues; fee based. Structure: Executive committee elected by members; Secretariat co-hosted by Malaysia and Switzerland. Communications: GKP Portal; annual meetings of the membership.
	The Ring (Regional and International Networking Group)	Initiated by IIED. Scope: to promote collaborative work in sustainable development; more specifically on water, livelihoods, multilateral environmental agreements and trade Membership predominantly Southern independent research and policy organizations. by invitation Structure: Governance agreement; Ring secretariat hosted by IIED Communications: selected publications accessible on IIED web site
	SDCN (Sustainable Development Communications Network)	Initiated by IISD Scope: Integrating Internet communications strategies into broader communications strategies; increasing the visibility of southern knowledge on the Internet Membership: selected sustainable development organizations around the world with communications expertise; by invitation. Structure: Governance agreement; Network Coordination Unit hosted by IISD Communications Communications: public portal site integrating member content at http://sdgateway.net; public SDCN web site at www.sdcn.org.; communications training materials workshops; web site reviews

Type	Group	Description
	TKN (Trade Knowledge Network)	Initiated by IISD and the International Centre for Trade and Sustainable Development. Scope: policy research on trade and environment linkages Membership: selected developing country research institutes with expertise in trade and environment; by invitation Structure: Network Coordination co-hosted by IISD and ICTSD Communications: research published on the TKN section of the IISD web site; country workshops with key decision-makers; policy advice to target decision-makers
	Canada's Networks of Centres of Excellence	A survey of these networks appears in the Clark study on Formal Knowledge Networks[15]. In general: Scope: narrow (eg, Telelearning; Sustainable Forest Management; Respiratory Health Membership: government, academic, private sector by invitation based on research excellence Structure: Usually highly structured, with a board of directors Communications: The federal funding program requires the articulation of communications plans as part of the grant requirements
	Global Public Policy Networks	A useful survey of these networks, including the World Dams Commission, the Global Environment Facility and others has been prepared by Wolfgang Reinicke, in Critical Choices.

[15] Clark.

Drawing from our observations, we have created a preliminary spectrum of collaboration models, ranging from networks of individuals within a single organization, to networks of many different organizations. Intersecting with this range of collaborators is the knowledge being shared and developed, from a narrow focus on single issues to a broad array of interests.

Collaboration Models



Abbreviations
CCKN: Climate Change Knowledge Network
CIDA: Canadian International Development Agency
CGSDI: Consultative Group on Sustainable Development Indicators
DG: Development Gateway
GDN: Global Development Network
GKD: Global Knowledge Dialogue
GKP: Global Knowledge Partnership
Global PP: Individual Global Public Policy Networks
IISD-GR:International Institute for Sustainable Development and Global Responsibility
NCEs: Networks of Centres of Excellence (Canada)
PAN: IDRC's networking program in Asia
SDCN: Sustainable Development Communications Network
TKN: Trade Knowledge Network

V. The formal knowledge network and its operating principles

Our primary interest lies in the bottom right quadrant of the diagram of collaboration models: those networks with narrower scopes of interest and more limited membership. We believe that these formal networks have the potential to have real influence with decision-makers, if their strategic intentions are well-defined from the beginning; they are well-structured and managed, and they build communications and engagement into their

day-to-day actions. We have developed the following working definition of formal knowledge networks:

> *Formal 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 meet the needs of target decision-makers at the national and international level.*

The key elements in this definition focus on purpose; expertise; capacity development; and the recognition that the knowledge being shared and developed is not primarily for the network itself but for use by others, specifically decision-makers. Based on our definition, we have developed several operating principles for formal networks:

1. Knowledge networks are purpose driven.

We have observed that the more narrow the focus, the more influential a network becomes. We recommend, therefore, that institutional collaboration take place around a single issue or problem rather than a broad spectrum of interests — focus is essential. The network's research on the issue should be transdisciplinary, always keeping in mind the sustainable development framework of economics, environment and social considerations, as well as the governance implications of its work. The purpose of the network could be thematically based (ex. trade, dams, ozone depletion) or regionally focused (ex. environmental policy options in Central America).

2. Knowledge networks are working networks.

One of the greatest challenges in setting up and running a network is moving the participants beyond basic information exchange to actually working together on solutions. In our view, knowledge networks are far more "work" than "net." ? A working network is driven not just by research but by implementation. As part of creating workplans for the network, the members should focus on how the results of the network's research will be used. The workplans should include strategies for the application of the research: How will the research be linked to the public policy process? How will the process or technology developed by the network be commercialized or put into practice by those outside the network?

3. Knowledge networks require institutional commitment beyond the participation of individuals and experts.

While expert networks and consultative groups have their place, we have learned that a knowledge network requires the commitment of an institution for several reasons.

- **Accountability:** The participants in the network represent institutional mandates rather than personal research interests. The agenda is, therefore, more likely to be focused on implementation. Participants are also held accountable for their work not only by their colleagues in the network, but by the institutions they represent.

- **Continuity:** Networks can take up to a decade to thrive and have real impact. With institutional commitment, it is more likely that work will continue even if individual staff change.
- **Commitment of resources**: The network activities will be endorsed as part of each institution's mandate, making easier the justification of both financial and in-kind support from participating institutions and ensuring their involvement in promoting the results of the network's research.

4. Knowledge networks are built on expertise, not just interest alone.

The identification and selection of members is one of the most important tasks of the network. The reputation of the network, and the level of influence it will have, will be based on the expertise and credibility of the members. We also suggest, as a guiding principle, that institutional membership be based on expertise and the capacity to undertake the research and implement workplans. Interest in an issue is not, in itself, reason enough to include an organization in a knowledge network. Membership in a formal network should be based on merit. This lends an aura of exclusivity to network activities, which makes development workers trained in consensus and public participation methodologies uncomfortable. Nevertheless, in order for a knowledge network to create new knowledge and to have real influence, that knowledge and influence must be grounded in expertise and reputation. If exclusivity is a concern of the network, then communications mechanisms can be employed to bring points of view from outside of the immediate network membership. These include workshops, electronic conferences, the nomination of associate members for specific activities and the formation of more open, dynamic "working groups" within the formal network.

5. Knowledge networks are cross-sectoral and cross-regional.

Knowledge networks should result in a reduction of boundaries between sectors such as universities and industry, or governments and civil society. [16] Sometimes, this can be accomplished through appointing representatives from different sectors to the network, as with Canada's Networks of Centres of Excellence. In other cases, this is accomplished by including cross-sectoral interests in workplans and implementation strategies. For example, the Trade Knowledge Network is composed entirely of policy research institutes, however, the research of the network is reviewed at country workshops attended by representatives of government, civil society and the private sector.

International knowledge networks must include the experience of developing and transitional countries. This respect for diversity — diverse values, interests and knowledge — is the "basis for crafting creative solutions that are more likely to last."[17]

[16] Clark, p .2.

[17] National Round Table on the Environment and the Economy. *Building consensus for a sustainable future: guiding principles*. *An Initiative undertaken by Canadian Round Tables*. (Ottawa: NRTEE, 1993), p. 10.

6. Knowledge networks must develop and strengthen capacity in all members.

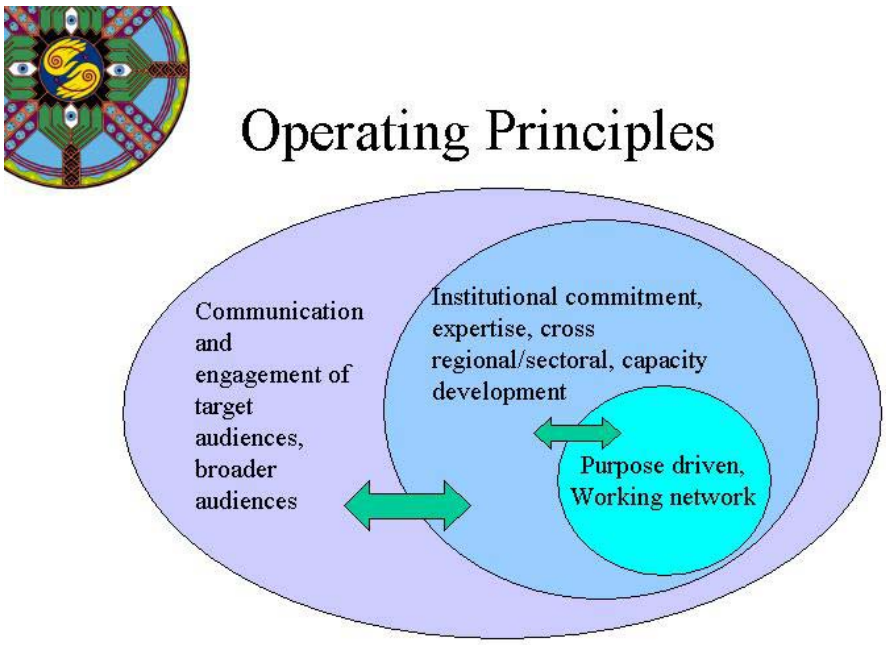
Strengthening capacity is critical to the formal knowledge network model: we create knowledge networks in order to learn from each other and build on each other's strengths. Capacity development occurs at all points in the workplan: in research management; in the substantive issues; in virtual teamwork; in communicating findings more broadly; and in influencing decision-making. An underlying premise of a knowledge network is that the whole is greater than the sum of the parts. However, a significant benefit of participating in a knowledge network is that each of the parts becomes stronger.

7. Knowledge networks are communications networks.

This final principle underpins all the others. The knowledge created and aggregated by the network must be shared beyond the network members. This operating principle is part and parcel of a network being a purpose-driven, working network. Mechanisms must be put in place from the beginning to reach targeted decision-makers who will be the ones to put the research of the network into action. These engagement strategies include traditional communications approaches — distributing print reports, placing the content on a network web site. But, the strategies must go beyond that and build relationships with decision-makers through regular, repeated contact, engaging them in discussions on the research and recommendations through workshops, electronic conferences, and other means.

Broader audiences should also be informed about the network, through effective use of web communications technologies on a network web site, and through marketing and positioning on other web sites, including the individual sites of network members, portals and gateway sites.

The relationship among these principles can be illustrated through the following nested diagram. The first two principles related to purpose and work lie at the heart of the network. The second group of principles addresses a variety of membership considerations — the composition of the network (expertise, cross-sectoral and regional experience) and the interaction of members (institutional commitments and capacity development). These serve to strengthen the reputation and effectiveness of the network, without which it would have no impact on decision-makers. The final principle, that the network is a communications network, emphasizes the *raison d'etre* of the network: the transfer of its work into implementation through the engagement of decision-makers and communication with broader audiences.



VI. Components for success

We have found that effective formal knowledge networks usually have certain components, some of which are well-understood and have been extensively documented and others which are less well-understood or previously uninvestigated. For example, while the use of ICTs to support network interactions among members and to facilitate the dissemination of information has been studied in detail, less exploration has gone into making the necessary link into the public policy process and into decision-making venues. Member relations and governance is often glossed over in the building of networks. Human resource issues have not been adequately addressed, in particular the pivotal role of a network manager. The role of young professionals in networks has also not been explored in any depth. And, we are all chasing the chimera of evaluation: is it possible to measure the impact of a knowledge network?

1. External communications and engagement strategies for network audiences

According to our principles, knowledge networks need to be purpose driven, working networks, and they must be communications networks. This means that the knowledge created by the network must be for broader application outside of the network. There are two levels of audience for networks:

- the target audience — those whom the network most wants to influence with the outputs of its work
- broader audiences — those individuals and organizations interested in or working on the same issues as the network.

Each network should continually ask what impact it hopes to have and on whom. The participants should determine their target audience with as much specificity as possible. The network should consider how it will move its advice and solutions into practice. On one level, this requires creating an effective link between the work of the network and the appropriate policy development process. On another, more direct level, the network should consider engaging representatives of the target audiences more actively in the actual work of the network, to ensure better acceptance of network findings.

Communications strategies for the release of research findings to broader audiences should be developed at the same time as workplans are developed: such strategies can include a network web site, print and electronic publishing, open computer conferences to discuss work, integration with strategies for flowing the research results and recommendations into other media (print, radio, TV interviews, etc.)

A more comprehensive exploration of this component is contained in our working paper "Dating the decision-makers: Moving from communications to engagement strategies."

2. Relationship building, management and governance

Our second working paper explores the need for setting network goals and objectives (the "purpose" or focus of the network), network membership issues, governance and decision-making mechanisms, day-to-day management through a secretariat or coordinating unit, funding and resource sharing issues. Our experience tells us that without this amount of structure, a network will do little more than exchange information from time to time. People become fascinated by collaborative technologies, but after a while the novelty wears off. The network falls into disuse without institutional commitment and staffing to continually push all of the participants. The opportunity to develop new policy recommendations and new development practices would be lost without this level of attention. As has been observed by others, these processes are 2% technology and 98% management of relationships.[18] Structure is an important support to the creation of a sense of community within a network, defining and maintaining the obligation and commitment of participants.

Further information is provided in the working paper "Form follows function: Management and governance of knowledge networks."

3. Internal communications infrastructure and virtual teamwork protocols

for members to learn from each other and build on each other's strengths, knowledge networks require a communications infrastructure and protocols to support the joint work of network members. An important step in managing a knowledge network is the creation of a private, closed "extranet" to link 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

[18] Regional meeting of Crossing Borders: E-governance in Canada , Winnipeg, December 2000.

of virtual teamwork is essential for members to interact creatively and productively within the objectives and timelines of network projects.

Our third working paper, “Helping knowledge networks work” provides more coverage of the internal communications necessary to keep networks on-mission and on-message.

4. Evaluation mechanisms

It is a common observation that what you can't measure, you can't manage. More research on measuring the overall performance of knowledge networks is required in order to manage them more effectively. We think that pooling our knowledge and staff resources in a knowledge network may result in more cost-effective research, particularly when adequately supported by information and communications technologies. Clark comments specifically on the financial health of many of the formal networks in his study of the Networks of Centres of Excellence and other Canadian 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").[19] This approach is helpful in illustrating how a network can work to fill gaps in knowledge and innovation. IDRC's "outcome mapping" methodology may provide additional insight into the impacts that knowledge networks may have on relationships, actions and beliefs of those working within and influenced by the network.

Our fourth working paper, “Measuring while you manage” explores in more detail the options available to networks for evaluation of their work and their influence.

Additional research

1. Management of web communications

The current proliferation of networks is driven in part by the 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 optimizing Web communication with external audiences. We are, therefore, paying particular attention to how this medium can be used for effective audience identification, engagement, and communication. We have drafted additional working papers on the tools and methods needed for communicating sustainable development on the Web and for measuring web site use.

[19] Janice Stein and Richard Stren, Draft. *Networks of Knowledge: Development experiences in a university setting.* (University of Toronto, 1999).

2. The role of young professionals

More research is needed on the minimum human resource requirements for knowledge networks. Institutional commitment is essential to ensure a constant, critical mass of researchers actively working on the network's agenda. We have also learned that there must be a network manager in place, designated to keep people interacting with each other.

However, in the working paper "Hidden assets", we focus our attention specifically on young professionals in knowledge networks. We have learned that effective networks have roles for young professionals — graduate students, interns, and young employees. Young people bring fresh research perspectives, collaborative work styles, and strong Internet communication skills to the network. Young professionals are in fact a significant factor in the success of a network.

VII. Value of the knowledge network approach

The rationale for investing in knowledge management and knowledge networks,

- filling the knowledge gaps that inhibit policy development for sustainable development,
- generating recommendations that will fast track innovation for sustainability,
- resolving current frustrations with inadequate or inappropriate policy development and implementation, and
- learning from each other across sectors and regions about best practices,

has been more than adequately explored by others — the evaluation of IDRC's extensive network experience in the report "IDRC networks: an ethnographic perspective,"[20] the University of Toronto study on "Networks of knowledge: development experiences in a university setting,"[21] by Richard Stren and Janice Stein, the UNDP's experience with establishing its Global Hub and SURF system, the work of Wolfgang Reinicke on global public policy networks,[22] the World Bank's Knowledge for Development report[23] and related suite of Global Knowledge initiatives, and a wealth of related literature in management journals and on the Internet.

In 1998, IISD and IDRC commissioned a study of Canadian experience in formal knowledge networks with particular interest in the model of the Networks of Centres of Excellence (NCE) — primarily a domestic model accelerating the creation of knowledge for domestic application. The resulting report by Dr. Howard Clark — *Formal Knowledge Networks*[24] — flagged a number of innovations in the NCE model that could

[20] Anne K. Bernard, *IDRC Networks: An ethnographic perspective* (Ottawa: IDRC, 1996).
[21] Stein, Stren.
[22] Wolfgang H. Reinicke et al., *Critical Choices: The United Nations, networks and the future of global governance* (Ottawa: IDRC, 2000).
[23] The World Bank, *World Development Report 1998/99: Knowledge for Development*.
[24] Clark.

be used to strengthen international research, development and policy networks. Those innovations included more formal and rigorous structures and governance, the inclusion of other sectors in the networks (in particular the private sector), and the emphasis on deliverables. While Clark was particularly intrigued with the economic benefit derived from those deliverables through commercialization, the message for IISD was that a network has to have an avenue for implementation. Research networking for its own sake is no longer an acceptable *modus operandi*; it doesn't realize the potential for networks to convert knowledge into action for sustainable development.

Based on these contributions to the field of networks, and drawing from our own experience, we believe that the formal knowledge network is an excellent model for institutional collaboration and partnerships. The knowledge network approach leads to focused collaboration, better-informed research results, new knowledge and real influence.

Rather than reiterating these findings, our series of working papers looks at what we think are some of the basic building blocks for successful knowledge networks. This series is not a study of why institutions should become involved in networks, but rather a report on how to create and strengthen knowledge networks. We hope that our observations will help network managers, participants and supporters capitalize on this approach.

Appendix 1: Evolution of IISD's interest in networks

From the beginning, IISD has functioned as both a research and a communications institute, engaging people of all backgrounds in producing and sharing knowledge about sustainable development. Our work is based on the ideology of partnerships: together we can solve problems and maximize opportunities more effectively than working on our own;[25] and on the ideology of information and communications: providing the right information to the right person at the right time will lead to improved decisions and actions.

The following is a brief chronology of our experiments and successes.

1991 [to date]

The publication of the Earth Summit Bulletin and its successor, the Earth Negotiations Bulletin — using electronic media to serve and expand audiences concerned with environment and development conventions and seeking to improve the international environmental regimes through openness and transparency of the negotiating process. IISD's Reporting Services also serves to link decision-makers with the academic sector, through creating electronic communities for discussion on key issues within individual negotiations. Most recently, Reporting Services has fostered a debate on compliance systems under the Kyoto Protocol to the UN Framework Convention on Climate Change, through the forum "Climate-D."

1992-1994

Creation and distribution of the Projet de Société database for tracking the implementation of Agenda 21 across Canada, in order to build and support a national community of interest and effort.

1993 [to date]

Internal experiments with Mosaic, leading to our first web sites on the Internet at the beginning of 1994. We currently attract 3 million users annually to our three major sites in our "web space": IISDnet (communicating the knowledge of the Institute); the SD Gateway (integrating our knowledge with other leading sustainable development organizations around the world) and Linkages (our Reporting Services covering the progress of negotiations and conferences on environment and development.).

1995 [to date]

Creation of the Consultative Group on Sustainable Development Indicators (CGSDI). The CGSDI has brought together leading experts from around the world working on aggregated indices to measure global progress towards sustainable development. The Group was established by invitation, interacts via a closed electronic mailing list, and is working primarily on the creation of the "Dashboard of Sustainability" — an Internet-based interactive system to illustrate environmental, social and economic indicators.

[25] Titi.

1996 [to date]

In 1996, we began to build organizational networks through our Spinning the Web project. Spinning the Web started as an experiment on using technology to get more information from the south onto the net. It has evolved into our prototype for working with a group of like-minded organizations to integrate our knowledge bases more effectively on the Internet and to stimulate new approaches to creating and communicating sustainable development knowledge more effectively.

1996

In 1996, IISD approached IDRC and the North South Institute to champion a review of Canada's role in the world of the 21st century. Maurice Strong was asked to chair a task force of eminent Canadians from all sectors. The resulting report, *Connecting with the World: Priorities for Canadian Internationalism in the 21st Century,*[26] focused on the need to accelerate the creation of substantive knowledge, and the need for knowledge-based networks to multiply, disseminate and expand knowledge. Equally important was the building of the capacity to use, adapt, and build knowledge for sustainable development at the local level, and to build a base upon which effective and appropriate policy could be developed. [27]

1997 [to date]

IISD's Trade Knowledge Network was established to build research capacity among a group of organizations, to better assess the linkages between trade and environment in Argentina, China, Central America, Pakistan, South Africa and Vietnam. The emphasis in the Strong Task Force report on building the base for effective policy input at the local level was influential in the design of the TKN. The TKN was, therefore, oriented to individual country studies and policy recommendations targeted at national rather than international audiences. Built into the design of the network was the requirement for partners to hold in-country workshops with key decision-makers, to engage them directly in the review of the research and the formulation of recommendations.

1998

As a follow up to the Task Force report, IISD and IDRC commissioned a study of Canadian experience with formal knowledge networks. We were particularly interested in the model of the Networks of Centres of Excellence (NCE) — primarily a domestic model accelerating the creation of knowledge for domestic application. We wished to look at the strengths of that model and at comparable international networks fostered by CIDA and IDRC. The resulting report by Dr. Howard Clark — *Formal Knowledge Networks*[28] — flagged a number of innovations in the NCE model that could be used to strengthen international research, development and policy networks. Those innovations featured the inclusion of more formal and rigorous

[26] Maurice Strong Task Force, *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, 1996).
[27] Strong Task Force, p. 7.
[28] Clark.

structures and governance, the inclusion of other sectors in the networks (in particular the private sector), and an emphasis on deliverables. While Clark was particularly intrigued with the economic benefit derived from those deliverables through commercialization, the message for IISD was that the work of a network has to have an avenue for implementation. Research and networking for its own sake is no longer an acceptable *modus operandi*; it doesn't realize the potential for networks to convert knowledge into action for sustainable development.

1998 [to date]

Based on the findings of the Clark report and our experience with our first two networks, we established a third knowledge network — the Climate Change Knowledge Network. The CCKN blends the best features of Spinning the Web, with its emphasis on effective uses of ICTs to share an integrated knowledge base from a network of institutions, and the TKN's emphasis on policy applications. Members within the CCKN work on both domestic and international climate change concerns. For example, a major emphasis has been on the training of African delegates to the Framework Convention negotiations; developing both a workshop format and a supporting handbook for all developing country negotiators.

In turn, Spinning the Web has been recast into the Sustainable Development Communications Network, with a formal governance agreement and focus on joint projects and workplans across the network. The Trade Knowledge Network, in its second phase, will include more emphasis on knowledge sharing across the network in addition to its country-level work. At the international level, its emphasis will be on equipping developing country policy-makers to strengthen their voices on sustainable development-related issues in the World Trade Organization.

1999 [to date]

We are also experimenting with regional policy networks (RPNs). The RPNs "aim to pull together and network the key institutions and individuals within a region who have capacity in the field of sustainable development policy. In each case, a form of steering committee is established composed of leaders in the field. Their purpose is to oversee the network as a whole, select priority areas for work, and ensure the delivery of the resulting policy ideas where they will be most effective."[29] Selection of priority areas is in fact determined by whether a clear outlet for the work can be identified. RPNs are being established in Southeast Asia (anchored in Vietnam), and Central America (anchored in Costa Rica).

[29] Mark Halle, *Internal briefing note on Regional Policy Networks*, IISD, 2000.