The Terminology of Knowledge for Sustainable Development:
Information, Knowledge, Collaboration and Communications

An IISD Knowledge Communications Practice Note

Heather Creech, Director, Knowledge Communications

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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) 958-7710
E-mail: info@iisd.ca
Web site: http://www.iisd.org/

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The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

2

The Terminology of Knowledge for Sustainable Development: Information, Knowledge, Collaboration and Communications

This glossary covers:

1. Principal distinctions
2. Terminology of knowledge processes
3. Typology of collaborative relationships
4. Inventory of communications practices and tools

1. Principal Distinctions

Term, concept, or practice	Explanation
Data, information, knowledge:	**Data:** a gathered body of facts [1] **Information:** Organized and processed data for communication to others. After data is gathered into some type of filing system such as a computer, and then processed (organizing or clustering the data into patterns, formatting, retrieving, printing, etc.), the output can be perceived as information.[2] **Knowledge:** Information received and interpreted by an individual or group to increase understanding or to apply to a task. Note the distinction between information and knowledge: knowledge involves the individual or group interaction with, interpretation of and response to information. This transformative process can be catalyzed through fostering relationships, through communications methods, through collective problem solving.
Knowledge types: explicit, tacit, implicit [3]	**Explicit knowledge:** that which can be written down, recorded or codified in some manner: often used almost interchangeably with information in the knowledge management/knowledge network context **Tacit knowledge**: 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

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[1] [http://searchstorage.techtarget.com/sDefinition/0,,sid5_gci211894,00.html]

[2] [Adapted from http://searchdatabase.techtarget.com/sDefinition/0,,sid13_gci212343,00.html]

[3] Excerpted from Creech and Willard, Strategic Intentions, IISD 2001. www.iisd.org/networks/research.asp

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

3

| | to run a community consultation or learning how to negotiate a policy change with a decision-maker). It is difficult, however, to articulate what that "how to" actually is. The transfer of tacit knowledge, therefore, is facilitated through shared processes (working together, mentoring and so forth) in addition to the physical transmission of written or recorded content.

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"[4]— in short, an individual's culture and values. An individual's knowledge of the world based on religious beliefs or other value systems reflects an implicit understanding of relationships with people and the environment that can strongly influence choices and actions. |
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2. Terminology of knowledge management processes

Term, concept, or practice	Explanation
Adaptive management	"Combines management, research, monitoring, and means of changing practices so that credible information is gained and management activities are modified by experience"[5].
Community of practice[6] **See also in this table, "Knowledge networks and Internal Knowledge management networks"** **See also in the next table, Typology of relationships.**	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. 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 objectives. Communities of practice can exist within an organization, or be independent of any organization; they can be "in person" or virtual/online.
Data mining	Sorting through data to identify patterns and establish relationships[7]
ICT4D: Information and	Tools for more effective knowledge generation and dissemination, in support of development

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

[5] www.for.gov.bc.ca/pab/publctns/glossary/A.htm

[6] Excerpted from Creech and Willard

[7] [http://searchcrm.techtarget.com/sDefinition/0,,sid11_gci211901,00.html]

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

4

Communications Technologies for Development	
Information management	Processes and systems for gathering, organizing, and enabling the retrieval and packaging of information.
Intellectual capital	Knowledge (explicit, tacit) held by individuals in an organization; considered an asset of the organization
K4D: Knowledge for development *See also discussion in the table Convergences in knowledge, technology, community and decision making*	Addressing the knowledge dimensions of development practices [what do we "know" about development; how can we share that knowledge; how can we learn and strengthen our knowledge base]: "Progress in development is contingent not only on creating and sharing knowledge but also on multiplying knowledge through synergies to generate usable knowledge that can inform public policy making. Scientific and technical knowledge that is not embedded within knowledge of the larger social and cultural context will, at best have a limited impact and, at worst, will distort development paths."[8] More narrowly, building knowledge based services as part of economic development (telecentres; customer service centres; distance education, etc.)
Knowledge based enterprise	"Organizations that generate wealth as the direct product of knowledge. For these organizations, knowledge and information - not just scientific knowledge, but news, advice, entertainment, and communication - have become their primary raw materials and their most important products and services. Quite simply, knowledge is what they buy and sell."[9]
Knowledge based economy	The shift from an economy based on production of goods to one in which knowledge becomes both input and output, driver and result. The knowledge-based economy relies on communications technology to support knowledge flows; a significant sector in this economy is the production of tools to support knowledge flows: hardware, software and connectivity.
Knowledge brokering	A person, organization, or process which identifies intersections between Knowledge Seekers (Buyers) and Knowledge Providers (Sellers) and creates a vehicle for linking the two[10].
Knowledge culture	"'Culture' is a term that encompasses the values, attitudes and behaviors of an organization". A knowledge culture focuses those values, attitudes and behaviours around the sharing of knowledge among staff and others associated with the organization: "people share openly, there is a willingness to teach and mentor others, … ideas can

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[8] Stein, J. Opening Networks in Closing Systems: Knowledge Networks and Public Policy. 2003. Prepared for The International Development Research Centre in the preparation of its Corporate Strategy and Program Framework 2005-2010.

[9] Queen's KBE Centre for Knowledge-Based Enterprises

[10] [http://www.delphigroup.com/coverage/admin-downloads/language-of-knowledge.PDF]

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

5

	be freely challenged and …knowledge gained from other sources is used"[11]
Knowledge management	Knowledge management is an internal management tool to strengthen operational efficiency: it is a practice in which an organization "consciously and comprehensively gathers, organizes, shares, and analyzes its knowledge in terms of resources, documents, and people skills."[12] The mapping and sharing of knowledge focuses primarily on individual explicit knowledge and its relation to organizational explicit knowledge (often referred to 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 (competency maps), identifying gaps in the corporate knowledge base and recording these in a systematic way.[13]
Knowledge mobilization	Knowledge mobilization addresses how external knowledge (outside of the organization) is sought out and combined with internal knowledge to create new knowledge that meets the needs of target users/clients.[14]
Knowledge networks *See also under Typology of relationships*	Knowledge networks focus on strengthening the sharing of knowledge and the generation of new knowledge to have greater influence on policies and practices outside of the network. The knowledge is for use beyond the network; the network is purpose driven, to create knowledge for application; and often time bound, in setting and achieving goals and objectives.
Internal Knowledge management networks; or thematic knowledge networks *See also under Typology of relationships*	These networks evolve through the thematic mapping of expertise within an organization, combined with the creation of appropriate environments for knowledge sharing. Their primary purpose is to maximize the application of individual knowledge to meet organizational objectives. These networks are largely internal, although they may cross national boundaries through inclusion of country offices of an organization. Sometimes called "communities of practice", but the principal distinction lies in the level of "voluntary" participation. In some institutions (UNDP and World Bank, for example), participation in at least one network or practice is in fact mandatory.

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[11] Queen's Centre for Knowledge-Based Enterprises, http://www.business.queensu.ca. **:** Instilling a knowledge sharing culture.

[12] [http://searchdomino.techtarget.com/sDefinition/0,,sid4_gci212449,00.html

[13] Creech and Willard, Strategic Intentions

[14] [Adapted from: *Advances in Strategic Management Conference on Strategy Processes,* INSEAD, 2003: C. Annique Un and Alvaro Cuervo-Cazurra.

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

6

Knowledge sharing	Knowledge sharing is "all about contribution, it's all about the respect for others' opinions and views, it's all about a good facilitation and synthesis process, it's all about the distribution of lessons learned from this knowledge process, and it's all about access to packaged knowledge and key insights that become the starting points for individual learning."[15]
Learning organization	Incorporates cycles of reflection and revision into the management practices of an organization; learning is both individual and collective within the organization.
Networked innovation	Similar to knowledge mobilization: the deliberate fostering of networks of individuals external to an enterprise to create broader base for exchange of ideas, testing of concepts, leading to innovation. A company that "networks" its innovation has very interactive relationships with its client base.[16]
Post-modern knowledge management	Recognizes that informal paths of communications and relationships cannot be systematized or "managed" but instead need to be fostered; attempts to find tools that can begin to merge formal and informal channels: Blogs, mining e-mails, etc. Blogs are Web logs: Public diaries maintained by individuals either on a personal web site or on a website maintained by an organization or community of practice. Used to share ideas, views, pose questions and exchange information.
Silo	"a self-defined group organized around a common subject that has depth but is not well connected or integrated with other groups, even if they have much in common."[17]
Tipping point management	A tipping point is an idea epidemic: A handful of special people play an important role in starting these epidemics. Mavens are the research experts; connectors are those with connections to decision-makers; salespeople are those with the ability to craft and communicate messages.[18] Tipping point management is the process involved in recognizing and fostering the specific individuals who play these roles within an organization.

[15] Bob Hiebeler, Arthur Andersen's managing director of KnowledgeSpace:
http://www.brint.com/km/whatis.htm
[16] Harnessing the hive: How online games drive networked innovation. Release 1.0. Vol.20, no. 9, 2002.
[17] Emerson, J. et al. "The Blended Value Map: Tracking the intersects and opportunities of economic, social and environmental value creation". 2003. http://www.blendedvalue.org/.
[18] Excerpt from Creech and Willard; adapted from Gladwell, Malcolm. *The Tipping Point: How Little Things Can Make a Big Difference*. Boston: Little Brown & Company, 2000.

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

7

Traditional Knowledge (TK); Traditional Environmental Knowledge (TEK)	TK and TEK are "based on observations and experience, evaluated in light of what one has learned from one's elders"[19] TEK is held collectively within a community, and considers not only the physical, external environment but the embedded relationships of individual, community, nature and spirit.

3. A typology of relationships: Knowledge networks, partnerships and other types of collaboration[20]

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 primary purpose is to maximize the application of individual knowledge to meet organizational objectives. These networks are largely internal, although they may cross national boundaries through inclusion of country offices of an organization. Sometimes called "communities of practice", but the principal distinction lies in the level of "voluntary" participation. In some institutions (UNDP and World Bank, for example), participation in at least one network or practice is in fact mandatory.
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. 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 objectives. Communities of practice can exist within an organization, or be independent of any organization; they can be "in person" or virtual/online.
"Open Source" development communities
Purpose driven, in the development and testing of new ideas. Open in that anyone wishing to contribute to the purpose can join; structured in the expectation that members will contribute actively to the purpose, with dedicated monitoring and reviewing of those contributions by the originators of the community; hierarchical in that the endorsement and adoption of new ideas is through the inner circle of the original creators of the community. Prone to regular branching off of new communities when ideas are not endorsed or adopted.
Communities of interest
More loosely knit communities built around common characteristics or shared interests (youth activism, hobbies, etc.) Participation is purely voluntary and will wax and wane with the level of

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[19] Huntington, H; Mymrin, N. Traditional Ecological Knowledge of Beluga Whales.
http://www.mnh.si.edu/arctic/html/tek.html

[20] Note: This table was first published in Strategic Intentions. It has been revised and updated for this paper.

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

8

interest of the participants.

Membership networks
In some respects, like a community of practice only involving organizational members rather than individuals. Formal structure for governance and operations, usually with a central secretariat.

Information networks and portals
These networks primarily provide access to information supplied by network members, occasionally with overlays of interpretative materials that 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.

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-à-vis their competitors outside the network."[21] 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.

Networks of experts
These networks bring together individuals rather than organizations; the invitation to join is based on expertise in a particular area. Their purpose can be either advisory or focused on research and problem solving.

Knowledge networks
Knowledge networks focus on strengthening the sharing of knowledge and the generation of new knowledge to have greater influence on policies and practices outside of the network. The knowledge is for use beyond the network; the network is purpose driven, to create knowledge for application; and often time bound, in setting and achieving goals and objectives.   "Formal" knowledge networks have a greater degree of structure, bringing together expert institutions for more specific research tasks, but retaining the focus on promoting the findings for use beyond the network members.

Multi-stakeholder partnerships
Partnerships involving several sectors of society, usually including representation from private, public and civil society institutions. Such partnerships are considered to be a key mechanism for translating political commitments into action. May be long term relationships or focused on specific project implementation.

Public Entrepreneurship Networks[22]:
Community-based consortia of public, private and citizen interests that come together to introduce, test and use new "greener" technologies.

Global Public Policy Networks

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

[22] Laws, Susskind et al. Public Entrepreneurship Networks. MIT, 2001.
http://web.mit.edu/dusp/etpp/content/publications/pdfs/PENIntro.pdf

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

9

Coalitions of institutions that work at the public/private interface in the development and implementation of public policy.	
Global Action Networks	
Action oriented networks,[23] involving multiple partners, led by strong advocates for change, as new mechanisms for accelerating societal change.	

4. An inventory of communications approaches and related tools

This section lists a number of communications practices and tools. Not all tools will be appropriate in all circumstances.

Approach	Description
Communications through group processes: "many to many"	Based on principles of participation and the belief that solutions developed collectively are more likely to be implemented than those imposed by others. Innovation comes about through dialogue and joint problem-solving.
Tool	
C4D	Communications for Development: the practice of using communications and engagement methods to facilitate international development processes, primarily at the community level. Emphasis is on horizontal communications: facilitating community/grassroots stakeholders to speak to each other about their concerns, needs and capabilities, exploring solutions within the community, and learning how to bring their views to the attention of others.
Appreciative inquiry	An organizational development tool focused on the principle of positive change. A participatory process that engages all stakeholders in exploring values, assets and contributions
Participatory video	The use of video to record participatory processes in order to capture and share back to participants the exchange of views.
E-conferencing	Electronic conferencing: the use of e-mail or discussion boards to bring together dispersed groups to discuss issues of common interest. Asynchronous in nature. Participants are usually invited.
Chat rooms	Attracts dispersed participants to discuss issues of common interest in real time but virtual space. Participants are self selected.
Simulations/gaming	Brings together participants in real time, either in person or virtually, to solve simulated problems or tasks.
Conferences, negotiations	Both a group process and a dissemination process: brings together participants in real time to debate ideas and positions, and to solve problems. In recent times, the knowledge-sharing components of major international meetings have proven more successful than the actual problem identification and negotiations of commitments to address those problems.

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[23] Waddell et al.

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

10

Communications by dissemination: "One to many"	The delivery of an individual's or organization's information, knowledge and beliefs to others. Innovation comes from feedback loops: encouraging responses to the knowledge provided.
Tool	
Publishing (Web, print, CD)	Trend is towards convergence and speed of publishing practices: more and more integration of book production with simultaneous release on the Web; increased use of digital printing for faster production times and shorter print runs; use of CD to package large volumes of content for audiences with limited Internet access.
Online databases, meta-databases	Structured information with a user interface that supports search and retrieval of data subsets. Meta databases attempt to link or relate varieties of data and information. The structure of the database itself often communicates a particular perspective on an issue.
Wiki technology	Allows open editing of Web sites: anyone can contribute content; and anyone can edit someone else's content.
E-mail lists, newsletters	Used either for an individual or organization to periodically send out information to a group of subscribers. Subscribers are either pre-selected by the sender, or choose to subscribe in order to receive the content.
Web advertising	Evolved from the concept of "pull" technology—pulling users into Web sites. Used either internally on a Web site to promote other sections of a Web site (e.g., pop-up screens inviting users to subscribe to a newsletter); or purchased on major portals (e.g., purchasing key words on Google that lead to Web ads popping up on the search results page).
RSS feeds	Really Simple Syndication: used to create a news feed from a Web site to a user's computer. Useful to the user for tracking new additions to favourite Web sites, without having to log on to each one. Evolved from the concept of "push" technology—pushing information out to users.
Blogs	Personal Web logs or online diaries. Used for the expression of personal views and knowledge. Often created within larger Web communities dealing with common interests. Of growing interest to corporations as a means to encourage the expression of new ideas.
Theatre and the arts	In the development field, the use of story-telling, street theatre murals and other artistic processes to attract audiences and communicate messages in more accessible ways. Recognizes that communications is not dependent on literacy.
Media (print, radio, TV)	The targeting of, and building relationships with, journalists and editors as both an audience that shapes public discourse, and a means to reach decision-makers responsive to public discourse. Also the direct use of radio and TV/video production to deliver knowledge. Like theatre, also recognizes that communications is not dependent on literacy.
Social marketing	The adoption of mass media practices (advertising, branding, etc.) for the promotion of social messages, with a view to influencing individual

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

11

	behavioural change on a larger scale.
Corporate communications	The use of corporate identifiers, newsletters, annual reports and other means to raise the profile and recognition factor of an organization.
Accountability communications	Corporate social, economic, environmental reporting; endorsement/adoption of principles and standards as a means to demonstrate responsibility to stakeholders and broader audiences.
Restricted/secure communications: "one to one," or "a few to a few"	Based on two concepts: the desire to catalyze and support the interaction of individuals and teams; and the concept of "safe spaces," where individuals feel empowered to take risks and express thoughts more freely. As with group process communications, innovation comes about through dialogue and joint problem-solving. But there is also a strong efficiency element: the provision of tools to individuals to support and speed up their interaction.
Tool	
E-mail	Considered to be the single greatest innovation in the ICT field.
Intranet	Restricted access Web site to employees of an organization, supporting the management process of the organization. Used to post policies, directories, minutes, meetings, etc. Often includes an internal staff news function, for staff to promote events, trips, recent research, etc.
Extranet	Same concept as Intranet, only access is provided to a select group of organizations in a network, partnership or alliance, for the purpose of managing their collaboration.
Groupware	Collaborative work tools that allow dispersed groups of individuals tow work together to draft and edit documents, build shared databases, "whiteboard" ideas, schedule meetings, and manage projects, tasks and timelines. See D-Groups (http://www.dgroups.org) for an application of groupware technology for international development work.
Instant messaging	Similar to a phone call, only one types instead of speaks. Has the advantage over phone in the ease with which one can bring in others into the "conversation" if they happen to be online at the same time. Good for immediate problem-solving.
Team meetings	Growing recognition that even virtual teams will benefit from face-to-face (F2F) interaction from time to time.
Video conferencing	Recent studies indicate that video conferencing hasn't quite lived up to its promise, due to expense of installations and connect time; or cost and inconvenience of participants having to meet at conferencing facilities outside of the immediate office. Internet video conferencing also has not significantly improved with respect to image resolution and speed of transmission.
Education and training	The transfer of knowledge and experience through formal and informal means.
Approaches	The key variations here involve: • incorporation of knowledge into formal education curriculum, ensuring that concepts are part of an accredited program, and become a baseline for future work; • targeted training, professional development, etc., ensuring that

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

12

	individuals have access to new knowledge;
	
	• use of face-to-face training methods (classroom, workshops, etc.); and
	
	• use of distance education methods:
	    ○ *Facilitated learning:* Provision of materials (in print or online) combined with interaction virtually (by video conference or e-mail) with an instructor, and possibly with other course participants.
	    Self directed: Provision of materials combined with automated assessment against learning objectives.

A note on Open Source/Open Content: Addressing the democratization of knowledge-sharing

The concept of "Open Source" is of growing interest to knowledge based organizations. It originated in the practice among computer programmers to release source code for others to work with and adapt, with no retention of intellectual property rights (IPR). This practice has evolved into "Open Content"—an ideology of collaboration that grants broader rights for sharing and use of new ideas and practices. Commercial control of intellectual property rights has been considered a significant barrier to knowledge-sharing and knowledge generation among experts and organizations. By adopting principles of Open Content, knowledge-sharing becomes more likely, and the protection of what may be desired to be public goods more feasible. Open Content is changing publishing practices by allowing IPR to remain the author's to share rather than the publisher's to sell.

IISD's Knowledge Communications program works at the intersection of communications, networks and sustainable development knowledge. Research and communications go hand in hand; IISD can make a difference in the world by sharing what we know—and what others know—about sustainability.

The Terminology of Knowledge for Sustainable Development:
An IISD Knowledge Communications Practice Note, Heather Creech, 2005

13