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Reader: Knowledge Management and Knowledge Systems for Rural Development

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I Introduction

1. Knowledge Management

Knowledge Management (KM) is a relatively novel management concept. It has been pushed by the rapid developments of Information and Communication Technology (ICT). ICT facilitates a speedy exchange of data, information and documents. There is groupware for communication; content management systems to organise and retrieve documents; expert systems, data mining and text mining systems, tracing services and search engines, e.g. Google. Communication via email, fax, and phone- and video-conferences is ordinary business. It is good guessing that technological advances will continue to revolutionize the way we communicate and interact with each other. While the speed and ease to exchange data and information will increase, a new challenge for users emerges: to select relevant data, information and documents. To better understand potential and limitations it is importance to recognise the differences between data, information and knowledge.

Level	Type	Description
simple	Data	Data consists of numbers, e.g. prices, quantities, records on income, temperature and so on. Data is not meaningful in itself but raw material for creating a message (information).
	Information	Any information contains a message and pursues an objective. The problem with information is that the sender of it must check if the receiver understands it as was intended by the sender. Therefore information materials must always be tested before mass reproduction begins.
	Explicit Knowledge	Explicit knowledge can be described, written down and documented (i.e. encoded). Behavioural rules, agricultural calendars, curative treatments, scientific theories represent explicit knowledge. Explicit knowledge is largely acquired in formal educational settings.
	Implicit Knowledge	Implicit knowledge is acquired through enculturation and experiences in one's socio-cultural environment. Implicit knowledge is complex, logical and value laden but often unconsciously acquired and learned. Therefore, it is difficult to explain to an outsider who does not belong to and the same social group. Due to its implicit characteristics it also is difficult to document. Much of our daily routines, behaviour, ideas about good life, success, tasty foods rest on implicit knowledge.
complex		

Sources: Michael Polanyi 1966; Nonaka/Takeuchi 1995, Davenport/Prusak 1998;

1.1 What is this distinction between data, information, explicit and implicit knowledge good for?

It helps to understand that ICT is most useful for shuffling data and information and to some extent for transferring documented knowledge. However, ICT is of little avail for transferring complex or implicit knowledge. The challenge to knowledge managers consists in organising encoded knowledge resources but also in bringing knowledgeable people together, so they can share their distinct

knowledge and experiences. By facilitating creative and relaxed communication people can synergize their insights and learn new, interesting things from each other.

Additional to ICT developments, a publication by Nonaka/Takeuchi (1995) - The Knowledge-Creating Company, had kicked off enthusiasm about knowledge management in organisations. The authors suggest that innovations result from creative combinations of explicit knowledge, or of combining explicit with implicit knowledge.

An example from a Japanese Enterprise in Osaka will illustrate their argument: the company wanted to develop a bread machine in the 1980s (Nonaka/Takeuchi 1995: 78). Laboratory research did not provide the recipe for making a good bread-dough. Therefore, the leading engineer decided that several engineers should make an apprenticeship with the best baker of the region. By observing, imitating and practicing the dough-making-process, the engineers finally understood the baker's secret: he rotated the dough but also twisted it. The authors argued that implicit knowledge can be uncovered by observing, imitating and practicing.

Interestingly, Takeuchi criticizes Western companies for concentrating too much on explicit knowledge: "What Western companies need to do is to "unlearn" their existing view of knowledge and pay more attention to (1) tacit (i.e. implicit) knowledge, (2) creating new knowledge and (3) having everyone in the Organization be involved. Only then can the Organisation be viewed as a living organism capable of creating continuous innovation in a self-organising manner." (Takeuchi: 1998).

Davenport and Prusak (1998) is another pair of experts on knowledge management. They argue that knowledge is considered the fourth production factor in companies in addition to labour, land and capital. Knowledge, simple or complex, explicit or implicit has turned into the intellectual capital of a company. Managers ask for a free flow and exchange of knowledge for the sake of a profitable enterprise. However, Davenport and Prusak argue that the change into a knowledge sharing company requires a fundamental change of a company's culture. Previous to this view, knowledge was hoarded by experts who legitimised higher status, payment and promotion. Today, managers consider personal knowledge of their employees to be the property of the company and ask for a free flow of knowledge. The authors believe that such a shift from a knowledge-hoarding expert culture to a knowledge-sharing one requires certain conditions and some time. It is worthwhile to be aware of the principles or conditions for a smooth exchange of knowledge (Davenport/Prusak 1998: 195-196).

2. Principles for knowledge-sharing

There exist several principles or conditions for a successful exchange of knowledge:

1. Building up good relationships on personal acquaintance and trust;
2. Create a shared knowledge base by vocational training, joint discussion, publication, team building and job rotation;
3. Provide adequate meeting places and time for exchanging ideas;
4. Establish incentives for those who share their knowledge;
5. Offer capacity building to employees in order to become more creative;
6. Appreciate an idea irrespective of the status of the person who provides it (non-hierarchical handling ideas);
7. Encourage employees to admit knowledge gaps and project failures; do not reproach such honesty.

Innovative knowledge creation is possible only if these principles are observed. Managers and leaders have the task to translate these principles into action, especially by setting examples to the employees.

3. Knowledge Management at GTZ

In the past, GTZ was a typical “knowledge-hoarding” expert organisation. Employees worked in different parts of the world and possessed expertise on a great variety of subject matters which was largely person-bound. Today ICT makes it technically possible to link data, information and knowledgeable individuals faster. The chances for prompt learning from successes and failures are greatly enhanced. Yet, does an expert culture simply change to a knowledge-sharing one because the technical possibilities are in place? The answer is yes, if leaders manage the organisation and its people according to the above mentioned seven principles.

Schwaab and co-author Rudolph (2006) of GTZ argue that knowledge management must build on the principle of giving and taking. A person, who contributes knowledge, must be confident to receive knowledge when needed. Reciprocity is an important value and condition for knowledge-sharing. Moreover, knowledge inputs must be recognised appropriately: “Everybody must be able to rely on the other not to undermine intellectual property rights...” (ibid.).

The same authors define the role of GTZ as a knowledge broker related to subject matters, methods and processes for the benefit of partner organisations and final target groups. They emphasise the need to combine (implicit) local, traditional knowledge and (explicit) global knowledge to make

development cooperation work: "Because knowledge, culture and development form a whole, we speak on one hand about developing local, traditional knowledge, while on the other allowing this knowledge to catch up with the challenges posed by globalisation." (ibid.).

4. Knowledge Networks for Rural Development

So far we have dealt with KM within the confines of one organisation. In contrast knowledge networks cooperate across different organisations. However, they function well if all network members contribute and receive knowledge that is helpful for improving the performance of their own organisation.

A knowledge network performs best if members

- agree on the same objectives;
- share strong interest in the same topic;
- contribute their experiences in an open fashion;
- meet regularly and invest time voluntarily;
- agree on neutral facilitation in working groups and meetings;
- set up a minimal or slender structure for managing meetings, websites and publications (lessons learned) .

These conditions are implemented in four knowledge networks we are going to present in this Reader:

Sonja Bartelt of GTZ describes the Global Donor Platform for Rural Development. It is constituted so far by 26 bilateral and multilateral development organisations. Its objective is to harmonise rural development strategies and programmes. The network decided to implement donor coordination in four pilot countries. Lessons-learned from these pilot experiences shall help to draft guidelines for successful donor coordination. The secretariat is in charge of organising meetings, managing websites and publications. To date the network published a joint donor concept on rural development (Download from www.donorplatform.org).

Tonino Zellweger (Swiss Center for Agricultural Extension and Rural Development, LBL) presents the Neuchâtel Initiative. To date the network comprises 13 bilateral and multilateral development agencies which are involved in extension and advisory service provision. The group's character is informal but the networkers share the same objective: namely, to harmonise their conception of successful extension. The Group produces guidelines, called common frameworks related to issues of interest: e.g. agricultural extension and advisory services, financing and evaluating extension, pro-poor extension or demand-driven agricultural advisory services. Responsibility for organising and facilitating

meetings, working groups and studies moves among members. Their website serves the purpose to share the frameworks with the international development community (www.neuchatelinitiative.net).

Désirée Dietvorst presents the African Forum on Rural Development. The Forum's objectives are to provide each other with information about programme-based approaches (PBA) and to exchange experiences with implementation at the field level. The network involves African managers and implementers of programme-based approaches. It is committed to foster dialogue and learning among African peers who otherwise have little opportunity to do so. The annual meetings are highly appreciated by the participants. Organisational support is provided by GTZ-SNRD. A website was created in 2005 (www.africaforum.info).

Lightfoot/ Scheuermeier present an African knowledge network, called Linking Local Learners (LLL). Its main objective is to link farmers and service providers for an exchange of knowledge that leads to higher profits of farmers. The authors explain that farmers are interested in increasing income and profit and less interested in learning per se. Local learning groups consist of 10-20 individuals who live and work in the same place having the same interest, for example, marketing tomatoes for higher profits. The group will then exchange experiences with peers who have the same interest but live far away. Internet access is a precondition for this kind of information sharing over large distance. The online-platform is supported by IDESO and IFAD and managed by the authors (www.linkinglearners.net).

5. Knowledge Systems in Rural Areas

Technical cooperation (TC) in rural areas has significantly changed since the 90s. The role of public service provision and agricultural research has decreased noticeably. Nowadays, TC programmes and projects face a pluralistic organisational landscape. In order to reach their objectives, TC programmes cooperate with a variety of public, private implementers. They also seek to improve cooperation between service providers and research institutions, on the one hand and farmers' organisations on the other. The Sector Project Knowledge Systems in Rural Areas (GTZ) sees potential in concentrating on income-generating agricultural cooperation with rural people. Farmer organisations, public and private service providers, NGOs, suppliers, civil society organisations constitute a knowledge system which should be managed in away to benefit small holder farmers and rural poor.

Reinhild Bode provides excellent insights into a coffee growers association in Ecuador, FAPECAFES. Her study focuses on knowledge management in value chains. Some important findings are:

- Data-like information as well as complex, implicit knowledge is poorly managed within the association.
- Communication flows slow down at the farmers' side and are hampered by different perceptions and languages.
- Transaction costs for knowledge management are already high.

Bode concludes that knowledge management and communication between different stakeholders in the value chain must improve. However, the related transaction costs for communication should not increase further in FAPECAFES. Therefore she recommends concentrating on priority problems of coffee growers. In a following step, information needs for solving these problems should be determined. Next, service organisations capable of providing answers must be identified. Finally, to keep a check on transaction costs, traditional ways to communicate among the coffee growers should be identified and strengthened.

Transferring information and knowledge is an enduring issue in TC projects and programmes. Due to the fact that farmers often cannot solve certain production problems, the leading paradigm had been to transfer adequate technical information to farmers. However, the past has demonstrated that technical advice has often been ignored by farmers. There are many correct answers to the question "why this happened?". One is that bad infrastructure and transport hampers effective cooperation; another one is that social, linguistic and cultural barriers impede effective communication between rural producers and outsiders. All answers are true. However, we will highlight one reason, which is also linked to the name of the GTZ sector project knowledge systems in rural areas: namely, the clash of knowledge systems in many rural TC projects.

Agricultural experts acquire knowledge which is generated in formal educational settings (schools, universities, research institutes) and circulated through the global network of professionals, institutions and publications (Warren and McKiernan 1995: 426ff). We call it therefore a global, formal knowledge system. Farmers have usually received little formal education. They acquire knowledge by customary practice, trial-and-error and experience. They learn what they know from the social and cultural group they live with. Farmer knowledge constitutes a local, traditional knowledge system. If farmers belong to an indigenous group, their knowledge belongs to an indigenous knowledge system. Local or indigenous knowledge systems are complex and embedded in traditional and customary (e.g. agricultural, curative) practices.

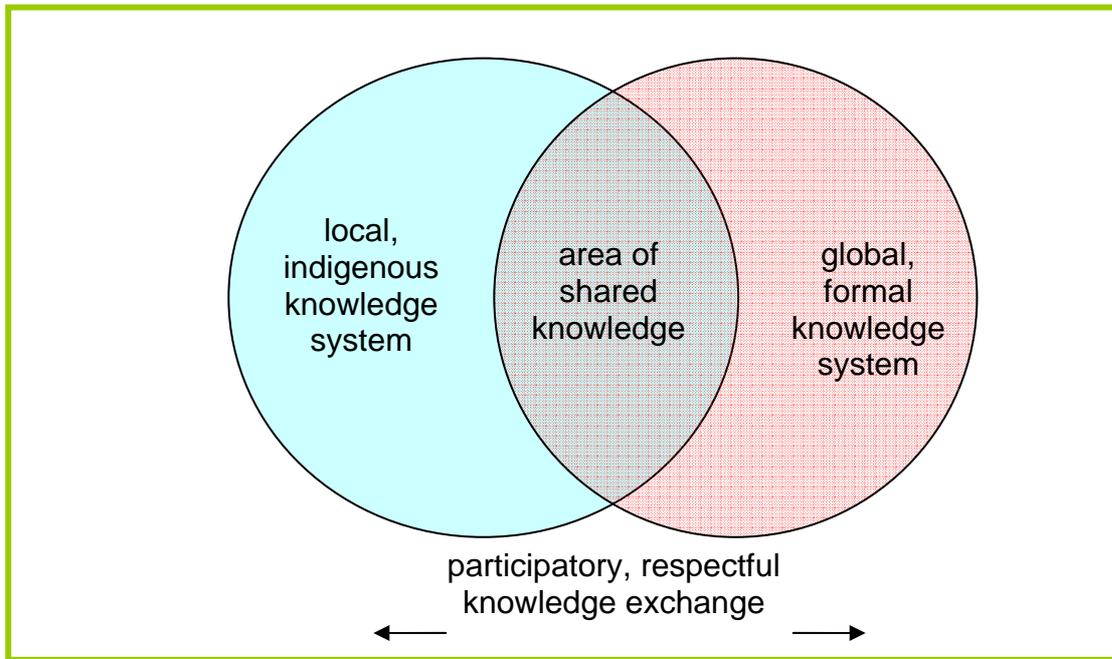
Knowledge transfers within one knowledge system, either formal or local, are relatively easy. However, transfers from a formal knowledge system to a local one - or vice versa - are very difficult, because the transferred messages do not make much sense within the other knowledge system. Consequently, farmers may listen politely to agricultural advisors but still do not change their practices. The challenge to TC projects consists in facilitating and improving the communication between agricultural professionals and farmers who have been educated in distinct knowledge systems.

Carmen Hess provides an intriguing example of two clashing knowledge systems, -- indigenous contra veterinarian knowledge – by examining the case of an anti-parasitic campaign for sheep in highland Ecuador. Although the campaign was well-intended and carefully planned by an NGO, the indigenous sheep owners finally concluded that the anti-parasitic vaccines have killed many sheep and that they will never again allow such a treatment. The author describes how she slowly gained a better understanding of the farmers' reasoning. Their negative conclusion was based on an indigenous theory of hot-cold imbalances which may cause mortality in sheep. According to that theory it was indeed quite obvious to farmers that the anti-parasitic vaccines had killed their sheep.

It is logical that agricultural experts are unaware of a knowledge system different to their own. Even if they become aware of some peculiar trace of local wisdom, they often reject it as false belief. The author explains that indigenous farmers often feel the same about bits and pieces of knowledge offered by visiting experts.

Box I-1 illustrates the idea of distinct knowledge systems: local and more global, knowledge systems overlap only partially. If the overlap is small, communication between agricultural professionals and local people may be full of misunderstandings (noise). The more overlap, the easier farmer-expert communication gets. The area of shared knowledge can be expanded, if farmers and outside experts spend more time together, exchange ideas in an open and respectful way and omit qualifying the others knowledge as true or false.

Box I-1 Partial overlap of local and formal knowledge systems



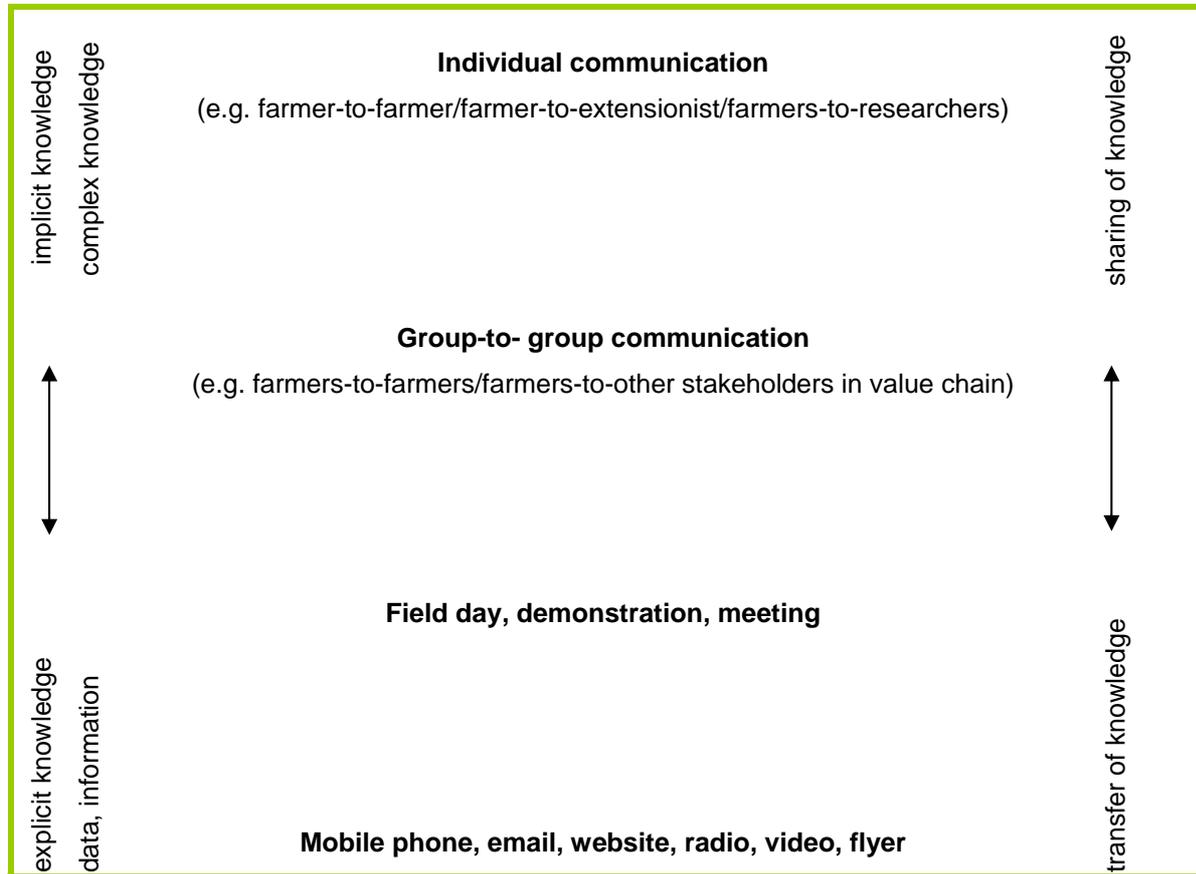
It is important to recognise that farmers often do not know how to solve a specific production problem but they still have complex, systematic knowledge in their heads. Unfortunately, it is of limited avail to ask a farmer, “how his knowledge system looks like”. It is good guessing that a German farmer with a university degree would not be able to answer the question either. Nevertheless, we all know that traditional, indigenous farmers learn new things and adopt new technology. This process can be spurred, by bringing formally educated experts and researchers and traditional farmers holding little formal education closer together. The chances for knowledge growth in TC can be greatly enhanced if experts, researchers and farmers together

- build up mutual trust and respect,
- develop a common language,
- create a shared knowledge basis,
- welcome and appreciate the other’s knowledge (system),
- show a learning attitude,
- spend time together for exchanging ideas,
- and spend time together working and investigating.

Since many years, research and extension organisations are asked to become culturally more sensitive. The appeal is laudable but does not help practically to improve communication between

farmers and experts, if experts have no clue as to the contents of a local knowledge system. To gain a systematic understanding of local knowledge usually requires years of anthropological-technical research. This cannot be done during the regular life span of a TC project. However, agricultural experts can do research on local knowledge systems via Internet – at least to some extent. Since the 1980s there is an enormous interest of social and natural scientists in indigenous, traditional, and local knowledge systems. To give a few examples: there is an indigenous knowledge learning group at the World Bank providing studies from African countries and publishing IK notes regularly (<http://worldbank.org/afr/ik/default.htm>); there are web-links related to indigenous and local knowledge systems in many developing countries (<http://worldbank.org/afr/ik/basic.htm>); there are networks concerned with indigenous agricultural and veterinary knowledge (e.g. www.oisat.org, <http://ethnovetweb.com>). Information and Communication Technology can help agricultural experts to retrieve information about the local knowledge system they deal with.

Box I-2 Knowledge types and means communication



In contrast, for innovative knowledge creation, high-quality communication between people is required. Participatory, client-oriented agricultural research, extension and advisory approaches provide better chances for joint learning. Box I-2 illustrates this tendency: if complex knowledge shall be exchanged between experts and farmers, communication must be personal. Moreover new information or know-how will be accepted only, if the person, who offers it, is respected, trusted and considered competent by the person who shall accept it. In contrast, farmers can get important data and information about prizes, product quantities or qualities simply via mobile phones or radio. (Also see: Reader on Agricultural Advisory and Extension Systems)

Walter Jahn reminds us that styles of communication and cooperation in TC partner organisations are culturally determined; a fact to which more attention should be given. The author refers to the renown as well as contested study by Geert Hofstede (2001) who examined the make-up of IBM organisations in several dozen countries. Hofstede defined five cultural dimensions which influenced the inner workings of the organisations: one of these five dimensions is 'power distance'. For each national

culture, Hofstede calculated the power distance index (PDI). PDI indicates the extent to which less powerful members of organisations and institutions (like the family) accept and even expect that power is distributed unequally.

What does that mean for participatory TC programmes? Perhaps it means that a partner organisation in which social inequality is an accepted fact of life, will have more difficulty to implement empowering, participatory development approaches, than an organisation which disapproves of the unequal distribution of power in society. (For a listing of countries, see <http://www.geert-hofstede.com>).

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