

## **Knowledge management and natural resources in Africa: perspectives from two networks**

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Across Africa increasing numbers of people, in the public sector and civil society, and gradually also in the private sector, are applying their expertise and capacities to address local and regional environmental problems, which, like anywhere else, are intricately linked to human cultures. In this situation it becomes more important than ever to facilitate and support a sharing of knowledge of what works or does not work and why.

This article describes the approach of two networks that support this kind of knowledge sharing for natural resource management (NRM) in Africa, and addresses how knowledge management (KM) can be a major driver to meet the closely connected development objectives of poverty reduction, income generation, and sustainable management of natural resources. These networks, the Community-Based Natural Resource Management Network (CBNRM Net) and FRAME, have similar goals, while their approaches differ in significant ways. By taking a closer look at the differences and similarities in these approaches and describing the networks' experiences, the article presents general insights regarding the use of networks for KM of natural resources, in Africa and beyond. Sharing this knowledge, stimulating others to adopt and test these approaches and working to learn lessons across cultural, language and other barriers is at the heart of the two KM-focused networks.

### **Natural resource management and knowledge management**

NRM involves the use of land, water, forest and biological resources. 'Natural resources' have, however, a far broader meaning and their management is fundamentally linked to people and livelihoods. This broader meaning is located, first, in environment, secondly in culture, and, third, in the relationship between environment and culture.

There are almost as many definitions of KM as there are definitions of NRM. In this article the term KM is used to describe the management, sharing and production of conclusions, analyses and actions drawn by people from quantifiable data and facts. Knowledge can be codified and published, but fundamentally knowledge resides within people, so-called tacit knowledge. Knowledge often implies the use of one or more of the following: experience, training, disciplinary models and theories and 'common sense', to reach conclusions and make sense of facts. One definition is particularly apropos here: information is the last answer, while knowledge is the potential – the capability – to answer the next question (Brown and Duguid 2002).

### **Environment, knowledge and culture**

In many ways KM-driven networks on the environment and NRM are identical to networks in other fields. However, the particular challenges involved with KM for NRM/environment are

very different and perhaps more difficult. The following are two areas which represent particular challenges:

- *The lag time in solving environmental problems*  
Many NRM and environmental problems are not readily resolved in a year or even a decade, and for some, such as climate change or biodiversity, success is a difficult concept to identify in the short term. This makes best practices, benchmarking and other knowledge sharing concepts particularly fragile.
- *Quality assurance and peer review*  
While many developmental issues face similar complexity, uncertainties and long time frames, NRM and environmental practitioners are often at a disadvantage over those technical areas where the causal relationships are reasonably well defined and relatively straightforward.

Natural resources are relative, in the sense that they are defined (and thus exist) within specific cultural contexts. One feature of the environment that is defined in one culture as a resource may not be so defined in another culture. And, of course, many features of the environment are ecosystem-specific. This variation can be highly person-specific: a forested hillside, for instance, may be seen to be a watershed protecting rice fields, habitat for wildlife, a resource for poles and building materials for local communities, a potential source of high value timber for export, a source of charcoal for distant urban dwellers, or a nuisance covering perfectly good top soil. None of these are 'wrong' perspectives, and an individual may in fact view a particular resource in multiple perspectives.

NRM and culture is overlapping. They refer to and explain each other. They address the same concerns, as seen from different perspectives. The integrated view of these perspectives that lie at the basis of the arguments presented here is that the broader context for understanding KM for NRM is that it addresses management of values, cultures and people.

## **Cases: The CBNRM Net and FRAME networks**

The need for KM for NRM led to the creation of CBNRM Net ([www.cbnrm.net](http://www.cbnrm.net)) and FRAME ([www.frameweb.org](http://www.frameweb.org)).

### **CBNRM Net**

CBNRM Net is built around the approach of community-based natural resource management (CBNRM). CBNRM builds upon the close linkage between culture and environment discussed above. In its focus on the natural local locus for management decisions, it introduces the community and co-management:

- *Community*  
The community is a collective. Introduction of the community into the management equation establishes a clear link between people and environment, between Culture and Nature, and between those that manage and that which they manage. At the same time, what constitutes a community is culturally specific and varies enormously. The focus is on those that do the management, that is, the local people. CBNRM points to NRM as a concrete relationship between natural resources and their managers.
- *Co-management*  
Co-management ties the community and NRM aspects of CBNRM together. CBNRM parallels – in social and policy terms – as a strategy the nestedness in the natural world, comprising organisms, species, associations and ecosystems, with activities taking place on different levels. This speaks to the importance of establishing relations between stakeholders located at different societal levels, based on comparative advantages. Successful co-management must give parallel and strategic emphasis to both community-based groups (the horizontal axis) and to operational linkages (the vertical axis).

CBNRM is a further development of NRM, an approach to managing specifically renewable natural resources. As these approaches have evolved within different cultures, employing specific subsistence adaptations within specific ecosystems, there are different understandings of what CBNRM implies. CBNRM has been described as a tool, a checklist, a method, a means, a set of activities, a model, a process and an approach. This speaks to the breadth, adaptability and robustness of CBNRM. It follows that it is difficult to agree on a definition of what CBNRM is. Although there have been several efforts, they as a rule come across as limited in one way or another (see the website for details). Far from being a problem this is the natural way of things in a cross-cultural application of management principles as that which CBNRM represent. CBNRM focuses on natural resources that are under some form of communal or collective management, that is, common property resources. This implies a concern with collective action in managing natural resources. Collective action is the coordination mechanism of CBNRM as a management approach.

CBNRM Net's mission statement is (see website for complete statement):

- Realize the potential in civil society, participatory approaches, local social organization, culture and traditional knowledge in managing local natural resources,
- Provide a broad and unified network interface for the use of the global CBNRM COP,
- Function as a gateway to, and clearinghouse for, all manner of CBNRM knowledge,
- Be a virtual meeting place for the growing CBNRM COP, thus making possible easy exchange of CBNRM knowledge, and through this supporting practical work,
- Produce new CBNRM knowledge and move the CBNRM agenda forward, and
- Advocate the importance of training and capacity building. Contribute to advance the role of Internet.

In the second half of the 1990s work on CBNRM had begun gaining ground in Africa. At the same time there was growing focus on locating an alternative to the existing paradigms in natural resource management, namely 'command and control' and market-based solutions. The World Bank decided to pursue this within the context of training and capacity building, and organized a large international workshop on CBNRM. The workshop took place in Washington D.C., USA, May 1998; with more than 200 participants from around 60 countries

throughout the world (workshop output is available on the website). The participants prepared a number of far-reaching conclusions and recommendations, one of which was to put in place a networking mechanism. This recommendation was implemented, and CBNRM Net became an instant success. The World Bank argued, however, that it had no comparative advantage in this kind of work, and CBNRM Net was eventually taken over by a Norwegian non-profit organization.

CBNRM Net's means of communication are the Internet and email. It aims to communicate with and connect people globally that work on CBNRM and related approaches, be it as politicians, public sector officials, project managers, funders, field-level implementers, researchers and local people, and to fashion these diverse categories of people into a global CBNRM COP. In KM terms, CBNRM Net operates along two parallel and equally important tracks: (1) it provides KM services to its members, users, and the global CBNRM COP more generally, and (2) it represents an ongoing effort to manage and develop the approach of CBNRM itself.

## **FRAME**

The FRAME programme, subtitled 'Knowledge sharing for the natural resource community', was established in 1999 by the Africa Bureau of the US Agency for International Development (USAID). While the programme currently also works on knowledge sharing for NRM in Asia and Latin America, its initial start in and focus on Africa means that a large part of its activities and experiences as well as the main part of its membership base are still related to this continent.

The initial objective of FRAME diverges from its present focus: in 1999, it was designed to provide strategic, external analysis and advice to USAID NRM and environmental programmes. This was considered important because of the bilateral focus of the donor, which obscured cross-border issues, and was often not sufficiently influenced by Africa-based expertise. The programme was also explicitly designed to encourage dialogue across cultural, sectoral and disciplinary borders. An essential component of FRAME was its role in providing expert advice and quality assurance, by drawing upon a collection of acknowledged experts from throughout the continent.

Over the years, many of the initial characteristics of FRAME have remained, although the overall purpose has expanded in terms of audience – with an emphasis now on all practitioners regardless of their involvement with USAID programmes, and narrowed a bit in terms of scope – from a broader inclusion of a range of environmental issues to more of an emphasis on NRM. A key study co-written by FRAME, World Resources Institute and USAID technical staff, 'Nature, wealth, and power', presented an analytic framework linking governance, co-management, economics and resource sustainability (USAID 2002). While FRAME does not emphasize community-based NRM per se (and in fact presents critiques and counter-perspectives related to a community focus), the 'Nature, wealth and power' study supports many of the analytic underpinnings of CBNRM Net.

The present objective of FRAME is to help NRM practitioners and decision-makers make greater use of the body of knowledge and ideas on successful and promising NRM experiences. These successful NRM experiences are projects and individual innovations and initiatives that have been shown to support local livelihoods and improve the environment.

To reach these goals, the programme consists of various components, including NRM field studies, workshops and meetings, a knowledge sharing website and an electronic newsletter for the global NRM community. In addition, the programme relies heavily on the involvement of an expert group and partnerships with key regional, multilateral and local organizations. The various components exist separately from each other and target slightly different audiences, but in the end are designed to work together to reach the overall goal of making greater use of the body of knowledge and experience available in the general NRM community. The website, newsletter, studies and workshops therefore draw heavily on the involvement of local practitioners and decision makers. Table 1 provides a brief overview of these components and their approaches.

**Table 1: Components of the FRAME programme**

Component	Knowledge sharing goal and approach
Knowledge sharing website	Enable knowledge sharing among the global community of NRM practitioners by making information accessible and allowing registered users to add resources and participate in electronic discussions and online communities. Key aspects of the website are: <ul style="list-style-type: none"> <li>- Library of documents, added by the FRAME team and site visitors</li> <li>- Online space open to all, but with some areas and functions only open to members</li> <li>- Venue for communities and ongoing networks</li> <li>- Platforms for electronic discussions (full participation over email possible)</li> <li>- Dedicated pages managed by local or regional organizations with KM needs</li> </ul>
Experts/Advisors group (Contact group)	Provide informed commentary and lead programmes. While in flux at this time, the overall notion of developing a body of heterogeneous experts who work with each other over time is a key element of FRAME
Electronic newsletter	Enable knowledge sharing among the global community of NRM practitioners by featuring news, events and funding opportunities as well as new resources on the FRAME website. (FRAMEGram)
Field studies	Produce knowledge by studying local NRM experiences. Studies are coordinated by FRAME staff and carried out by local consultants
Workshops and meetings	Bring people in direct contact with one another to increase exchanges of ideas and information
Partnerships	Develop working partnerships with key regional, multilateral and local organizations and networks. Partners are involved in all other aspects of FRAME

### Comparison of characteristics

As an overview of the characteristics of the two networks, a summary of a number of relevant variables have been put together in the form of a framework for describing and analyzing networks (see Table 2).

**Table 2: Overview of characteristics of CBNRM Net and FRAME**

Characteristic	CBNRM Net	FRAME
<b>Administration</b>		
(1) Organization – owners and managers	Owned and managed by CBNRM Networking, a Norwegian non-profit. Members and users contribute information to website and newsletters	FRAME staff coordinates the overall programme. Members and readers contribute information to website and newsletters. Local professionals conduct field studies and manage online communities
(2) Management structure – horizontal or vertical	Horizontal. No top-heavy mgmt. / decision-making structure	Horizontal. Project-oriented, but with authorities potentially decentralized. For FRAME web, software designed to permit control by users, not centre management
(3) Funding – source	CBNRM Networking (www.cbnrm.com)	USAID (www.usaid.gov)
(4) Membership-based or not – member's rights and obligations	Members' rights incl. access to entire website, and obligations incl. contributing knowledge. Possible to subscribe to only Newsletter	Website open to all users but registered users can participate more fully. The initial concept of an experts group is being refined. Subscription to FRAMEGram without membership possible
(5) Web-site architecture	Straightforward html. No frames. No bells and whistles	Tomoye's 'Simplify' software. Low-bandwidth version available
<b>Focus</b>		
(6) Thematic focus – sector(s) and/or issues(s) covered	CBNRM and co-management	NRM broadly understood
(7) Geographic focus – local, regional and/or global focus	Global. Special focus on Africa	Global, with a initial and continued emphasis on Africa
(8) Emphasis on political-economic dimensions	Discussions cover these issues more than environmental / biophysical issues	Link between NRM and good governance, tenure and local livelihoods is key, influences portion of the content
(9) Emphasis on knowledge, as opposed to on information	On knowledge, not information / data	On integrating tacit knowledge with printed and online information
(10) Concerned with KM	Through website, newsletter and studies	Through studies, workshops, website and newsletter
(11) Concerned with training and capacity building	Yes	Yes
<b>Structure</b>		
(12) Size – number of members	500+ members and subscribers. Number of regular users much higher	900 registered users and many more visitors. Newsletter sent to over 1200 subscribers. People also involved in studies and workshops
(13) Language of communication	English. Home page available in other languages	Website and newsletter available in English, French and Spanish
(14) Clustering – degree to which members form clusters that are more closely linked to one another	Modest. Promoted by providing membership database for countries and regions. Otherwise, on personal initiative	Modest. Through meetings, workshops, and online communities of practice. A major tenet to break down the informal barriers between practitioners
(15) Flexibility – adaptability of communication and, in more general terms, the network	Good. In present set-up, main focus on Internet and email as means of communication	Good. Being part of a donor project produces some tensions, but willingness to experiment and respond to change quite high



Interactions		
(16) Directional flow – in a specific relation: (a) who initiates communication and (b) direction of the flow of things exchanged	Primarily one-way. Management works to meet members' needs, and increase member participation. A south-south flow is emerging	Two-way. Input from network into the website, newsletter, studies and overall programme is crucial. 'Simplify' software selected to promote peer-to-peer exchange
(17) Frequency of interactions	Regularly high for email. Person-to-person interaction less common	Variable. For website peak around organized online events. Studies lead to regular local and regional meetings
(18) IT skills expected of members/users	None, beyond using browser and email software	For website some training/practice is helpful to contribute to discussions or to add documents
(19) Concerned with using a broad suite of ICTs	Yes	Yes
(20) Openness to collaboration with like-minded networks	Substantial	Links with other networks a key aspect
Source: Adapted from a model of social networks in Soeftestad and Kashwan (2004).		

## CBNRM Net and FRAME: comparisons and lessons learned

This section analyses and compares the two networks. It furthermore identifies a number of lessons learned to this way of working, and discusses how best to address the challenges encountered, by one or both networks, their members, or jointly with other stakeholders.

### Key similarities

Most noticeably, it is CBNRM Net and FRAME's thematic focus on NRM and a geographic emphasis on Africa that makes a comparison possible. In terms of origins, management and technology, among others, they share the following similarities:

- Originate in, receive funding from, and have a central management outside of Africa;
- Are managed by non-Africans, with users and members in the West and in Africa providing input;
- Employ Western technology;
- Use former colonial languages as primary languages of communication; and
- Subscribe to basic values fundamental to development cooperation – and to how knowledge and KM is conceptualized – that are Western in origin.

When it comes to, for example, content, emphasis and organization, the networks share the following emphases:

- A concern with knowledge (as opposed to information/data);
- An interest in all aspects of KM, including sharing and production of knowledge;
- A concern for training and capacity building;
- A focus and attempt to stimulate two-way communication between the central management and the network as well as communication among members of the network;
- The use of ICTs, in particular Internet and email, to support the network, and an interest in using a broad suite of ICTs and creating a low technical threshold to maximize participation;
- The use of some form of membership to strengthen the network; and
- A flexible approach to all these characteristics.

## Key differences

Beyond these similarities, however, the networks differ considerably, both in other key characteristics as well as in their approaches to certain key aspects both networks deem important. CBNRM Net, for example, has an even stronger emphasis than FRAME on keeping its ICT components as simple as possible to facilitate access and use, while FRAME's choice of using special KM software for its website increases potential user interaction – e.g., by uploading documents and allowing local ownership over community space on the site – but also creates a small technical barrier that potential users first have to overcome. Also, while CBNRM Net is based in civil society, FRAME is located in a developmental organization and enjoys a close relationship with a major bilateral and multilateral donor, USAID. Other noticeable differences include:

- *Definition of network.* While CBNRM Net is structured around Internet and email, FRAME's approach is broader,
- *Focus.* A focus on CBNRM (by CBNRM Net) versus NRM (by FRAME),
- *The meaning of membership.* CBNRM Net members have various rights, including access to parts of the website, but also obligations, including contributing knowledge to the CBNRM community. The users of CBNRM Net's website can subscribe to the Newsletter but otherwise there is little interaction. In the case of FRAME, membership is a more vague term: While registered users on the website are considered members, others who may not use the site can also be involved in the network, e.g., as part of the expert group and through studies,
- *The importance of ICTs.* From CBNRM Net's focus on the website and Internet and email it follows that the importance of ICTs as a means of communication is relatively large. For FRAME, ICTs are key to networking and information dissemination, but the programme also emphasizes physical meetings, studies and assessments.
- *Types of interactions and activities.* In CBNRM Net, the types of interactions and activities to a large extent centre on the website and the Newsletter. In addition, a smaller group of people collaborate on research and studies. Within FRAME the type of activities taking place include studies, workshops, and organized online discussions, and
- *Target audience.* For CBNRM Net, the target audience consists of anybody that works on or has an interest in CBNRM, in one capacity or another, be it as decision-makers, funders, managers, practitioners or researchers. So far, members and users in Africa are found in the public sector and civil society, while members and users in the West comprise mostly people working in development cooperation and academics. For FRAME, the target audience includes practitioners, decision-makers, and donors, and for FRAME web it also includes academics. FRAME has an interest in influencing donor programmes, especially USAID's programme.

## Lessons learned

CBNRM Net and FRAME have been active networks for KM for NRM in Africa for seven and six years, respectively. During this time, both networks have encountered or identified a number of challenges to effective KM for NRM in Africa, ranging from geography and



environment, via culture to the use of ICTs. While some of these are general challenges for KM, others are specific to the NRM community and some are particularly relevant in Africa.

### **The definition of NRM**

The definition of NRM itself is a challenge to successful KM for NRM. As described above, natural resources and hence NRM can be seen as relative; their value and potential use depend on the stakeholders' background and perspective.

In addition to these overall differences in the interpretation of NRM, specific regional differences also exist. The French speaking countries in West Africa for example naturally use French terms to describe NRM, while terms like NRM and CBNRM are coined within English and cannot easily be translated into French. The French term 'gestion des terroirs' corresponds more or less to NRM in a narrow sense, and is commonly translated into English as NRM, but without knowing the context from which it is taken, the meaning of this term can easily be misunderstood (see also 'Culture, communication and language' below).

### **Regional variation**

Throughout Africa, natural resources vary drastically, as do African cultures, political systems and economies. This variation offers tremendous opportunities for knowledge sharing, but also many pitfalls, for example, in terms of common words with quite different meanings, and approaches which appears to be similar but may not be.

### **Available technology and the digital divide**

Both CBNRM Net and FRAME rely heavily on Internet and email. The use of these technologies, however, decrease potential participation in the networks by those within the target audience who do not have easy, cheap, and reliable access to them. This imbalance in access – that is, the digital divide – exists between the North and the South as well as within countries in the South, for example between urban and rural areas, among societal sectors or population groups, and between the educated and non-educated. Marked differences between countries also exist with the poorer countries lagging behind.

Overcoming these technical challenges is sometimes up to the network coordinators, or to the members themselves. In the case of CBNRM Net, one member in a remote part of Mali could not receive the newsletter because of the settings of the local Internet Service Provider. The solution was that a colleague based in Bamako became a member in order to receive the newsletter, which is printed and forwarded via surface mail, a 1 day journey away. FRAME initially included an annual conference, which was perhaps the most effective knowledge sharing activity for many of the initial members, but its high cost and difficulty in scaling up led to its demise and the embracing of the "Simplify" software for the website, rather than a more traditional html tool. The interactive website, however, has not fully counter-balanced the loss of physical exchange.

Both networks have had great success with email-based newsletters as a complement to the websites.

### **Cultural, values and approaches to technology**

Cultures differ in their approaches to new technology, including the ease with which new technology get adopted or how power relations among people influence access to them. An

example is a situation at the headquarters of a World Bank project in Niger, where the only computer connected to the Internet was located in the office of the project director. When the Director was in, staff could ask for permission to use the computer, and when he was away nobody could use it.

### **Patterns in website usage and access**

The arguments on the digital divide discussed above can be partly substantiated by reference to website usage statistics. The important data to consider here are:

- *Number of visitors.* For the month of February 2006, the CBNRM Net website had 12,596 unique visitors, and FRAME 2,154 (with 49,872 separate pages viewed),
- *Geographic location of the visitors.* For the year of 2005 around 1/3 of the visitors to CBNRM Net were located in North America, around 1/3 in Western Europe, and 1/3 in the rest of the world. Africa had the lowest numbers of visitor per capita of all continents. FRAME web has a similar experience: web statistics indicate visitors from Africa are a minority.

Other imbalances are not so easily measured but are equally important. Of special importance are those connected with gender, training and education, the rural-urban divide, and with tribal/ethnic background.

### **Culture, communication and language**

Different cultures have different ways of defining, managing and using knowledge. Apart from its basis in values, this is, in practical terms, connected with the presence or absence of a written language. At the level of the individual, it has to do with degree of literacy. These differences are so large that it is necessary to approach the need for, form of, and implementation of KM – be it in general or for NRM – with an a priori focus on specificity and flexibility.

One aspect of this deals with communication across languages. Above this was hinted at for English and French. The problems here are small compared with those occurring in the case of relationships between a major world (and colonial) language like English and the countless small indigenous languages of Africa. The problems are compounded in situations where another colonial language, say French, function as an intermediary. These local languages are really repositories as well as the overt expression of traditional knowledge, in our case knowledge about the environment and the relationships between the culture and its environment. Translating indigenous terms regarding the environment and human-environment relations into English means that knowledge invariably gets lost. It also means that, as cultures change and gets acculturated; this linguistic trace cannot be used to understand that environment. And, even worse, there is a growing tendency that such exported and translated terms are exported back into the culture of origin. CBNRM Net has focused on this, partly through constructing two-way dictionaries between colonial languages and indigenous languages (Soeftestad 2004, Soeftestad et al 2004).

### **Conflict and conflict management**

Conflict over natural resources, including ownership, access to and use of such resources, are increasing throughout Africa. Very often the different possible uses of natural resources cannot all be carried out without limiting or even eliminating other choices. In their use and

exploitation of natural resources, stakeholders are driven by interests that are invariably different and that often contradict each other. While the reasons for conflict in many cases are clear, how to address and prevent them are only gradually becoming clear. There are a lot of useful experiences, and the networks can make important contributions in this area, beyond the obvious functions of traditional KM.

We are here talking about a more proactive stance, which is not so easy for the networks to get involved in. The reasons for this are twofold: the centre of management is located far away, and the networks do not penetrate very well down to the grassroots level, or they certainly have little direct control. The solution would seem to lie in partnerships with local actors.

### **The term ‘Community of practice’**

Both networks use the common KM term: Community of Practice (COP). CBNRM Net, specifically, aims to cater to the global CBNRM COP. This term, however, is not at all intuitive and at the level of the African continent or the world a COP exists largely as an abstract category; and those that are part of it often do not know of each others existence. In addition, COPs are fluid; membership depends largely on self-identification while the focus area changes given the interest, needs and input of the members. Whether the term COP is useful in the case of large networks as CBNRM Net and FRAME therefore needs careful consideration. In fact, while FRAME uses software that is explicitly based upon COP theory, it is changing its wording away from KM-derived concepts, while COPs can be highly useful in Africa, the term itself can indeed be misleading.

Certainly there are some examples all over Africa of informal communities, and trying to optimize and support them through networks is not at all unattainable. But we have learned, the hard way, some things:

1. COPs do not just develop because there is a network available; there has to be internal interest and need that the network support, and
2. COP support is a lot of work, and not work that can be done solely through ICT tools. COPs in their purest form (voluntary, self-defining groups) have a tendency over time to limit or focus subject matter and topics, often unintentionally, with members on the periphery slowly but surely opting out. NRM, being by its nature multi-disciplinary, can be ill-served by COPs in those instances where they become too homogenous.

### **General processes of knowledge management**

The approach to KM devised and implemented by the two networks leads to forms of integration of knowledge, in fact, aims at such integration. At the same time there are contradictory processes operating: namely the increasing tendencies toward compartmentalization of knowledge, for example, between traditional knowledge and modern knowledge, within sectors (e.g., agriculture, forestry), within countries/regions and between countries, and within disciplines (e.g., technical sciences vs. social sciences). The coming of the modern nation state in Africa, and subsequently globalization, has played important roles in advancing these processes. The role of the networks relative to these tendencies is to counter such contrary processes, and to integrate the various disparate elements.

## **Conclusions and recommendations**

These preliminary conclusions and recommendations relate to what KM is in connection with NRM in Africa, draw some inferences based specifically on the challenges presented in the ‘Analysis’ section, and present some views on lessons learned for good KM, valid for Africa and beyond.

### **Integrate knowledge in development cooperation**

Networks cannot do the job of KM alone. All serious stakeholders involved in development cooperation will have to do KM. Furthermore, all these stakeholders will have to collaborate, and here enters the issue of comparative advantages. For better and lasting results other stakeholders, with their specific comparative advantages, will have to be involved in this overall KM agenda, and target specific issues.

### **Use an integrated bundle of knowledge management tools**

ICTs have to be used in combination with other tools. These other tools would ideally comprise face-to-face tools like for example workshops and training. The use additional tools will be decided upon in collaboration with local partners, and in understanding with and in respect of the local situation. The use of the tools in this bundle, that is, specifically their relative importance in the overall KM strategy, will depend on the project at hand, and also on the characteristics of the audience, stakeholders and/or users, among others.

### **Advocate public consultation**

One key goal with KM in Africa is to support and advance public consultation, that is, the state and public sectors’ willingness and approaches to involve the citizens. Key elements, foci, and goals with supporting public consultation are increased transparency, participation, inclusion and decentralization. A specific aspect of this is that KM should advocate and support increased emphasis on traditional culture and local values, for example, when it comes to traditional knowledge and social organization (e.g., the chieftaincy system in large parts of West Africa). The networks can play crucial roles in advancing these concerns and this agenda.

### **Support regional integration of knowledge**

While Africa is a vast continent, there is more that binds people, tribes and countries together than that separate them. Regional integration of knowledge for NRM and management of such knowledge would be beneficial. Regional integration and learning however is a difficult and tricky process, not just because of different ecosystems and management systems but due to different cultural, legal and institutional realities. (For instance, FRAME’s first meeting was in Mozambique, where it became clear that participants from the Sahel and from Southern Africa were often using NRM and community fundamentally differently).

### **Network of networks**

One way of achieving such knowledge integration, and several of the other ideas and goals proposed here, is to create a “network of networks”. Such an initiative, which should be based in Africa, would provide resources and advise to local and regional networks, existing ones and ones to be formed. Following the recommendation above on creating an integrated bundle

of KM tools, this network should be conceptualized broad enough – as well as resourced accordingly – to function via such useful tools.

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## Abstract

Natural resource management (NRM) involves the use of land, water, forest and biological resources, and is fundamentally related to people and their livelihoods. NRM presents a clear need for knowledge management (KM) among NRM practitioners with various backgrounds and interests and from various organizations and countries. The complexity of the topic, regional differences of perspective, and wide variations in ecosystems, social structures and political systems throughout Africa constrain the ability to share and learn from experiences. The Community-Based Natural Resource Management Network (CBNRM Net, [www.cbnrm.net](http://www.cbnrm.net)) and FRAME ([www.frameweb.org](http://www.frameweb.org)) facilitate KM for NRM through utilizing information and communication technologies, supporting online communities, distributing

newsletters and organizing regional meetings. The article compares the experiences of the networks from the perspective of users, project coordinators and donors.

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