

# [African modern management practice and indigenous knowledge systems](https://assignbuster.com/african-modern-management-practice-and-indigenous-knowledge-systems/)

The lifetime’s accumulation of facts, events, procedures and so on, stored in our memories, enable us to exist in this world. Knowledge management is emerging as the new discipline that provides the mechanisms for systematically managing the knowledge that evolves with the enterprise. While technology is not the most important aspect of knowledge management, it does play a crucial role in facilitating communication and collaboration among knowledge workers in an organization. Indigenous knowledge is a profound, detailed and shared beliefs and rules with regards to the physical resource, social norms, health, ecosystem, culture, and livelihood of the people who interact with the environment both in rural and urban settings. This paper seeks to address the role of indigenous knowledge in Africa and some lessons for knowledge management initiatives as well as using knowledge as a basis for sustainable practice.

Keywords: Indigenous knowledge, knowledge management, intellectual property rights, disaster mitigation, sustainable development, Africa.

## INTRODUCTION

Indigenous knowledge in the South African context is understood as productions consisting of characteristic elements of the traditional artistic heritage developed and maintained by a community in the country or by individuals reflecting the traditional artistic expectations of such a community.

(South African Government, 1997: 10-11)

A large part of the rural communities of the world still rely on traditional local knowledge passed on by past generations to be able to cope with their everyday life. Even up to the present time, indigenous knowledge has provided basic knowledge in agriculture and forestry, human and veterinary medicine, natural resource management, nutrition and other activities (Agarwal, 1999; Emeagwali, 2003; Warren, 1991). Indigenous knowledge is entrenched in community practices and is culture specific and complex relations and differentiated communication networks are used as a means of transmitting local knowledge. Access to knowledge depends on the social control of communication channels and the local power structure. Different rural groups utilise their own modes of knowledge, depending on age, sex, religion and ethnic or class affiliation (Appleton, 1995; Emeagwali, 2003; Fernandez, 1992).

Indigenous knowledge systems have long been undervalued, however an increasing amount of research on indigenous knowledge systems is now coming to the fore but in these studies the role of gender is often neglected. Numerous authors (Agarwal, 1999; Appleton, 1995; Emeagwali, 2003; Nakashima and Roue¢, 2002; Warren, 1991) have argued that indigenous knowledge and gender are inextricably bound up with each other. They have also maintained that if indigenous knowledge systems are capable of forming a basis for sustainable development, their capacity to innovate on the basis of gendered- knowledge-generating processes must be recognised and respected. As noted before, indigenous knowledge is not only the most important knowledge system for many rural people, but also an essential component in sustainable development.

Article 8(j) of the Convention of Biological Diversity (UN, 1992: 12) has contributed to ensuring that indigenous knowledge be part of the sustainable development and biodiversity conservation discourse by requiring signatories to: “ respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional life-styles relevant for the conservation and sustainable use of biological diversity”.

WHAT IS INDIGENOUS KNOWLEDGE?

The challenge of understanding indigenous knowledge begins with the perplexing task of deciding how it should be named (Nakashima and Roué, 2002; World Bank, 1998). There is no general consensus since there is recognition that existing terms are for one reason or another unsatisfactory. The following are examples of some of the terms used:

Traditional Ecological Knowledge (TEK): This term was coined in the 1980s intended to highlight communities’ knowledge of the natural environment, but there is a challenge in thinking of ‘ traditional’ knowledge as fixed to the past and not subject to change as cultural views and activities change. However, it is not enough to confine the sets of knowledge possessed by the communities to the ‘ ecological’ view as they encompass more than one scientific discipline and empirical knowledge, but also practices and know-how, value systems, ways of life and worldviews (Nakashima and Roué, 2002).

Indigenous Knowledge: This term poses a challenge in relation to defining who an indigenous person is. For example, Emeagwali (2003) indicates that although it helps to identify American and Australian aborigines, it doesn’t apply as neatly to Africa and Asia where the majority of the people are natives and it is therefore difficult to differentiate between one group and the other.

Local Knowledge and Farmers’ knowledge: In several African countries, the label indigenous (or ‘ Bantu’ in the case of apartheid South Africa) has retained a strongly negative connotation due to its past history of use by colonial oppressors. Therefore, the terms farmers’ knowledge and local knowledge are sometimes the preferred terms of use (Ortiz, 1999; Warren, 1991). The term local knowledge has the additional advantage of not excluding non-indigenous farmers, fishers, health practitioners and others whose extensive knowledge of the natural environment is also a product of resource-based livelihoods extending across many generations. Its major weakness is a lack of specificity, as most knowledge can be labelled local (Ellen and Harris, 1996; Emeagwali, 2003; World Bank, 1998).

Odora-Hoppers and Makhale-Mahlangu (1998) defines Indigenous Knowledge Systems (IKS) as the combination of knowledge systems encompassing technology, social, economic, philosophical learning/educational, and legal and governance systems. It is knowledge relating to the technological, social, institutional, scientific and development including those used in the liberation struggles (Odora Hoppers and Makhale-Mahlangu, 1998). Indigenous Knowledge (IK) is described by Warren (1991) as the local knowledge that is unique to a given culture or society. It is distinct from the international knowledge system generated by universities, research institutions and private firms. It is said to form the basis for local-level decision-making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities. According to various literatures (Appleton, 1995; Ellen and Harris, 1996; Fernandez, 1992; Pidatala and Khan, 2003; Prakash, 2003; Warren, 1989, World Bank, 1998), there are special features of indigenous knowledge that distinguishes it broadly from other knowledge, viz:

Local: is rooted in a particular community and situated within broader cultural traditions and is a set of experiences generated by people living in those communities. Separating the technical from the non-technical, the rational from the non-rational could be problematic. Therefore, when transferred to other places, there is a potential risk of dislocating indigenous knowledge.

Tacit: as knowledge that is not easy to codify.

Transmitted orally: or through imitation and demonstration. Codifying it may lead to the loss of some of its properties.

Experiential rather than theoretical knowledge: experience and trial and error, tested in the rigorous laboratory of survival of local communities constantly reinforce IK.

Learned through repetition: which is a defining characteristic of tradition even when new knowledge is added. Repetition aids in the retention and reinforcement of IK.

Constantly changing: being produced as well as reproduced, discovered as well as lost; though it is often perceived by external observers as being somewhat static.

Shared to a much greater degree than other forms of knowledge: this is why it is sometimes called ‘ people’s science’.

The International Council for Science (ICSU, 2002) study group defines traditional knowledge as a cumulative body of knowledge, know-how, practices and representations maintained and developed by people with extended histories of interaction with the natural environment. These sophisticated sets of understandings, interpretations and meanings are part and parcel of a cultural complex that encompasses language, naming and classification systems, resource use practices, ritual, spirituality and worldview (ICSU, 2002). This body of knowledge is distinct from the modern or ‘ western’ knowledge and it is easy for people to attempt to ‘ blend’ or ‘ integrate’ local knowledge into existing scientific procedures assuming that rural people’s knowledge represents an easily definable ‘ body’ or ‘ stock’ of knowledge ready for extraction and incorporation (ICSU, 2002; Laird and ten Kate, 2002; Pidatala and Khan, 2003; Prakash, 2003). However, it has been pointed out that rural people’s knowledge, like scientific knowledge, is always fragmentary, partial and provisional in nature, it is never fully unified or integrated in terms of an underlying cultural logic or system of classification (Pidatala and Khan, 2003; Van Vlaenderen, 2000).

Moreover, knowledge is embedded in and emerges out of a multidimensional universe in whose conceptions of the world include pathways between natural and societal realms and whose spirituality infuses everyday objects and everyday acts (Laird and Kate, 2002; Ortiz, 1999; Shiva, 1993; Swift, 1979). Mundy and Compton (1999) rightly point out the importance of understanding indigenous communication systems because they:

Have value in their own right (this is important since the erosion of indigenous communication systems by exogenous education endangers the survival of much indigenous knowledge).

Exogenous channels have limited range (this is particularly relevant with regard to females who are often neglected in terms of formal educational systems and other information as well as learning opportunities).

Indigenous channels have high credibility because of their familiarity and are controlled locally (in terms of women, this is important for planning and development intervention).

Indigenous channels are important conduits of change. Appleton (1995), Wildschut and Hulbert (1998) and World Bank (1995) have shown that informal interpersonal contacts and networks among women are critical for sharing information and empowerment.

Development programmes can use indigenous communication for both information collection and dissemination (this implies developing relevant gender sensitive approaches and methodologies).

Indigenous channels offer opportunities for participation of local people, especially those who tend to be marginalised like women.

Therefore, whereas scientific practice generally excludes the humanistic perspective, traditional understanding assumes a holistic view including language, culture, practice, spirituality, mythology, customs, and even the social organisation of the local communities. Indigenous people rarely have formal written records of their knowledge and this is one of the reasons why the western based knowledge tends to undermine it (Ariga, 1997; Van Vlaenderen, 2000; Warren, 1993).

## KNOWLEDGE AS A BASIS FOR SUSTAINABLE PRACTICE

Mathias-Mundy (1993) argues that the recognition and reinforcement of indigenous knowledge systems can form the basis for an alternative development model. It has been noted that these systems have the capacity to integrate multiple disciplines thus creating a synergism that is beginning to demonstrate higher levels of efficiency, effectiveness, adaptability and sustainability than many of the conventional technology systems (Mathias-Mundy, 1993; Mies and Shiva, 1993). An increasing number of scientists and policy-makers are calling for the integration of indigenous and science-based knowledge in the wake of the potential contribution of indigenous knowledge to key items on the global agenda which is gaining wider recognition (Barber et al, 2002; Gray, 1995; Ortiz, 1999). However, there is a concern that this recognition is merely nothing more than a façade and that the scientific and the development communities view indigenous knowledge first and foremost as a resource to be appropriated and exploited.

Since the 1992 UN Conference on Environment and Development, and in particular the coming into force of the Convention on Biological Diversity, increasing attention has been drawn to the contributions that indigenous knowledge can make to global biodiversity conservation objectives (UN, 1992). It is noted that this emerging role for indigenous knowledge has flowed quite naturally from the recognition that most remaining regions of the world that are biodiversity rich are also homelands for traditional and indigenous people (Ariga, 1997; Wynberg, 2002). The industrialisation and modernisation process has in its wake left countries with virtually no biodiversity and this is in sharp contrast with the countries home to indigenous people whose persistence of traditional ways of life has gone hand in hand with the maintenance of local ecological systems and the conservation, and even enhancement, of biodiversity (Laird and Wynberg, 2002; UNDP, 1997; UN, 1995a).

Environmental knowledge had been central to human survival throughout history. It was virtually impossible to survive in hunting and gathering societies without a good knowledge of forest and wildlife – plant and animal species, their growth environments and habitats, growth cycles, behaviour of animals in relation to their environment, specific characteristics of plant and animal species and their uses (Clarke, 1997, Erskine, 1992). Similarly, farming societies depended upon a keen understanding of the local natural environment and ecological processes leading to the regeneration of environmental resources, for example, soil fertility and water. By interacting with their immediate environment over centuries, local people have gained an enormous volume of knowledge about their environment. Their knowledge involves not only environmental resources available within the locality but also how to manage these resources sustainably (Ariga, 1997; Moser, 1993; Snyder and Tadesse, 1995).

It has been argued that the indigenous people of the world possess an immense knowledge of their environments, based on centuries of living close to nature (Clarke, 1997; Laird and Wynberg, 2002). By deriving their livelihoods from the richness and variety of complex ecosystems, they have an understanding of the properties of plants and animals, the functioning of ecosystems and the techniques for using and managing them that is particular and often detailed. In rural communities in developing countries, locally occurring species are relied on for many – sometimes all – foods, medicines, fuel, building materials and other products. Equally, people’s knowledge and perceptions of the environment, and their relationships with it, are often important elements of cultural identity (Moser, 1993; Shiva, 1993; Whitehead, 2003). There is an almost universal acknowledgement that most indigenous people utilise traditional songs, stories, legends, dreams, methods, and practices as a means of transmitting specific elements of indigenous knowledge. Sometimes it is preserved in the form of memories, ritual, initiation rites, ceremonies, or dance that is entrusted to the following generation through story telling and participation by the younger ones in the activities. Sometimes it is preserved in artefacts handed from father to son, or mother to daughter.

In indigenous knowledge systems, there is usually no real separation between secular and sacred knowledge and practice – they are one and the same (Emeagwali, 2003; Laird and ten Kate, 2002; UNDP, 2002). It should also be noted as well that different segments of a community will hold different levels of knowledge, this may be delineated according to age, lineage, gender and in some cases depending on the position a person holds within the community, for example, an elder, a priest or herbalist.

Dommen (1988 quoted in Brouwers 1993: 5) outlines the following characteristics of African rural communities:

an ability to work with the environment rather than attempting to override it;

a deliberate utilisation of diversity of micro-environments;

the purposeful selection throughout the production period of crops planted and cultivation practices used and the integration of livestock into the system as a means of maintaining soil fertility; and

the deliberate staggering of outputs in space and time.

In this scenario, rural peoples’ knowledge is an integration of complex livelihood systems that will ensure their survival, be it a farming system that utilises various land-use functions like production, protection, conservation and maintenance with the use of a variety of biological components in order to conserve the natural resource base whilst increasing productivity.

## ENGENDERING INDIGENOUS KNOWLEDGE SYSTEMS

It has been argued that women, in particular rural women, not only play a key role in the maintenance of agro-ecosystems and livelihood security but are also custodians of a unique knowledge about biodiversity management and uses (Shiva, 1993; Whitehead, 2003). The knowledge and practices that they engage in is a cornerstone for the development of ecologically sound consumption and production patterns as well as for poverty alleviation alternatives, especially in the developing countries where poverty is rampant and has a ‘ feminine’ face (Flintan, 2003; Whitehead, 2003).

A variety of international organisations dealing with environmental and indigenous systems have recognised the important role played by women as custodians of traditional knowledge:

Chapter 24 of Agenda 21 takes into account the contribution that women make to sustainable development and makes a case for the protection and promotion of “ the traditional methods and the knowledge of indigenous people and their communities, emphasising the particular role of women, relevant to the conservation of biological diversity and the sustainable use of biological resources” (UNIFEM-UNCED, 1995).

The role of women is recognised by the Convention on Biological Diversity in the conservation and sustainable use of biological diversity and the need for the full participation of women in policy making and the implementation of conservation strategies (UN, 1992).

The Final Decisions and Platform for Action of the Beijing Conference assert the need to ensure the participation of indigenous women in environmental decision-making; guaranteeing the effective protection and use of indigenous women’s knowledge and technologies related to biodiversity; safeguarding the intellectual property rights of indigenous women; and promoting and sponsoring research on the role, knowledge and experience of indigenous women in food-gathering and production, soil conservation, irrigation, land use planning and other environmental tasks (UN, 1995b).

Appleton (1993b) argues that indigenous knowledge and skills held by women often differ from those held by men. Also, the kinds of relationships that exist between these two sets of innovators will affect hierarchies of access, use, and control, resulting in different perceptions and priorities for the innovation and use of technology by women and men. Since gender is a cultural construct related to the behaviour learned by men and women, it therefore stands to reason that it will affect what they do and how they do it within a specific social group.

Gender differentiation comes about as a result of the specific experiences, knowledge and skills which women and men develop as they carry out the productive and reproductive responsibilities assigned to them (Pearson, 1992; Shiva, 1993). This means that both women’s and men’s creation, adaptation and use of knowledge (both modern and indigenous) and technology are shaped by the economic, social, cultural, political and geographical contexts in which the two sexes live, but which each gender experiences in a different way (Appleton, 1993b). This is supported by studies undertaken especially in rural areas where women are shown to have different knowledge from that of men, for example, women will know more about home gardens, chicken- breeding and men will know more about livestock management.

Norem et al (1989) identifies four ways that reflect gender differences in knowledge systems. They state that women and men may have:

a different knowledge of similar things;

a different knowledge of different things;

different ways of organising knowledge; and

different ways of preserving and transferring knowledge.

These differences are important to take note of when designing a project or introducing interventions to community development.

## INTELLECTUAL PROPERTY RIGHTS (IPRs) AND INDIGENOUS KNOWLEDGE

There are currently few provisions for the protection of traditional or local knowledge systems from being exploited by those wanting to make profits. While biodiversity managers or development practitioners are still grappling with defining a role for indigenous knowledge, others have already been taking advantage of its usefulness. Bio-prospecting which is defined as the quest for natural products to be exploited for commercial gain (Laird, 2002), is explicitly targeting traditional knowledge holders. This is because they have acknowledged that the accumulated knowledge and traditional practices of indigenous communities are a powerful resource that can greatly facilitate the task of identifying useful new varieties of domestic plants or animals, isolating novel biological components, or developing innovative technologies and techniques. This exploitation of indigenous knowledge has been termed bio-piracy (Gregorie and Lebner, 2002; Quiroz, 1994; Williams, 2003). The pharmaceutical, agricultural and biotechnological industries have been particularly at the forefront of acquiring this knowledge, however, this has not automatically led to giving credit to the communities and has been characterised as well in the lack of sharing benefits (Dutfield, 2002; Economic Commission for Africa, 2002; Laird and ten Kate, 2002; Tobin, 2002).

The patenting of domestic plant varieties, traditional medical products and other biological resources whose identification and use are embedded in traditional knowledge has been a source of grave concern for developing countries and indigenous communities who are marginalised in the process (Posey and Dutfield, 1996). The patent process produces patent violators when exclusive rights to exploit for commercial gain are given to a foreign company or individual whose purported ‘ invention’ is based on indigenous or traditional knowledge. These arrangements are not geared for safeguarding the communally owned traditional knowledge whose intention is not for commercial profits but to be custodians for future generations. Besides financial loss for these communities, this also strengthens and spreads the Western paradigm of nature and science, by presenting knowledge appropriated from the indigenous communities as the cutting edge of a modern technology (Gregorie and Lebner, 2002).

The World Trade Organisation under the agreement on trade related aspects of intellectual property rights (TRIPS) have undertaken actions that will help counteract the granting of patents that is detrimental to indigenous peoples. However, critics argue that there is no distinct plan in this agreement aimed at protecting indigenous knowledge although it is a forum set to dismiss inappropriate patents (Dutfield, 2002; Gregorie and Lebner, 2002; Laird, 2002; World Bank, 1998). As an antidote, the World Intellectual Property Rights Organisation (WIPO), has formed a commission on genetic resources, traditional knowledge and folklore, whose mandate includes the investigation of innovative measures to accommodate the exceptional characteristics of indigenous knowledge systems.

This will go a long way in accommodating traditional knowledge that is marginalised by the current intellectual property rights (IPRs) that are specifically designed to protect individuals whose ‘ inventions’ require safeguarding in view of their potential commercial value that is in direct opposition to indigenous knowledge that is collectively owned and has been around for several generations (Laird, 2002; Posey, 1996; Williams, 2003; World Bank, 1998). It should be noted that not only has indigenous knowledge been ignored, also gender has not been taken into consideration in the designing, planning and implementation of IPRs. This is a serious omission, as women possess much of the indigenous knowledge as they are the primary harvesters of medicinal plants, seed stocks and small game, are keepers of the knowledge about significant spheres of biodiversity and, as such, they are able to identify the environmental indicators of ecological health in those spheres (Shiva, 1993; World Bank, 1998).

## INDIGENOUS KNOWLEDGE IN NATURAL DISASTER REDUCTION

In Africa, local communities had well-developed traditional indigenous knowledge systems for environmental management and coping strategies, making them more resilient to environmental change. This knowledge had, and still has, a high degree of acceptability amongst the majority of populations in which it has been preserved. These communities can easily identify with this knowledge and it facilitates their understanding of certain modern scientific concepts for environmental management including disaster prevention, preparedness, response and mitigation. Indigenous knowledge is a precious national resource that can facilitate the process of disaster prevention, preparedness and response in cost-effective, participatory and sustainable ways. Hence a blend of approaches and methods from science and technology and from traditional knowledge opens avenues towards better disaster prevention, preparedness, response and mitigation. Globally, there is increasing acknowledgement of the relevance of indigenous knowledge as an invaluable and underused knowledge reservoir, which presents developing countries, particularly Africa, with a powerful asset in environmental conservation and natural disaster management.

Specifically, from time immemorial, natural disaster management in Africa has been deeply rooted in local communities which apply and use indigenous knowledge to master and monitor climate and other natural systems and establish early warning indicators for their own benefit and future generations. In the traditional African worldview, environmental resources (land, water, animals and plants) are not just production factors with economic significance but also have their place within the sanctity of nature. Certain places have a special spiritual significance and are used as locations for rituals and sacrifices, for example, sacred grooves, shrines, mountains and rivers. These locations are quite often patches of high biodiversity which are well conserved and protected by the community.

For the traditional people of Northern Ghana, gods, spirits, shrines, ritual crops and animals, food items and cash crops are all inter-related. Indigenous knowledge is therefore an essential element in the development process and the livelihoods of many local communities. A major challenge that African countries continue to face is how to reconcile indigenous knowledge and modern science without substituting each other, respecting the two sets of values, and building on their respective strengths. Recent studies in Kenya on the application and use of traditional knowledge in environmental conservation and natural disaster management cited examples of areas where such knowledge is still prevalent and harnessed. Regarding land-use conservation, shifting cultivation was a traditional practice in which land was never over used or repeatedly cultivated season after season and year after year.

Land was left to rest and covered again with plants and leaves to enable it to accumulate vegetable manure. Mixed crop cultivation practice enables leguminous crops to restore nitrogen in the soil for other food plants. Knowledge of when to expect long or short rainy seasons enables the farmers to plan appropriately which crop is suited for a particular season. Traditional indigenous knowledge terminologies of types of soil and their reaction to water enables the people to use each type of soil appropriately by planting the correct crops.

As for coping with changes in the weather, traditional indigenous knowledge of storm routes and wind patterns enables people to design their disaster management long in advance by constructing types of shelter, wind break structures, walls, and homestead fences appropriately. A hydrological disaster is obviously unmanageable when it starts. Similarly, knowledge of local rain corridors enables them to prepare for storms. Knowing the colour of clouds that may carry hailstones enables people to run for cover. Knowing that prolonged drought is followed by storm, thunder and lightening during the first few rains enables people to prepare or expect a disaster. A change in birds’ cries or the onset of their mating period indicates a change of season.

Similar application and use of indigenous knowledge for disaster management is also prevalent in Swaziland. Floods can be predicted from the height of birds’ nests near rivers. Moth numbers can predict drought. The position of the sun and the cry of a specific bird on trees near rivers may predict onset of the rainy season for farming. The presence of certain plant species (for example, Ascolepis capensis) indicates a low water table. These examples underscore the importance of harnessing indigenous knowledge not only as a precious national resource but also as a vital element in environmental conservation and natural disaster prevention, preparedness and response. However, despite the prevalent application and use of indigenous knowledge by local communities, it has not been harnessed to fit into the current scientific framework for environmental conservation and natural disaster management in Africa.

As a result, there is a general lack of information and understanding of the need to integrate or mainstream indigenous knowledge into scientific knowledge systems for sustainable development in the continent. To achieve this integration would require a blend of approaches and methods from science and technology and from indigenous knowledge. Recently UNEP initiated a project in Kenya, Tanzania, South Africa and Swaziland to harness and promote the use of indigenous knowledge in environmental conservation and natural disaster management through training and access to and exchange of information.

The information collected and analyzed through the project is expected to enhance understanding of the need to integrate indigenous knowledge in development processes for poverty and disaster risk reduction as well as in fostering involvement of all constituents including the local communities. The project should be seen as part of a new interest in traditional African knowledge systems which are still prevalent despite the numerous interruptions by development interventionists. It is hoped that the project will be replicated in more countries in Africa and other regions of the world.

## Sustainable Natural Resource Management: value & potential contribution of IKS

Several studies assert that the strengths of IKS in natural resources management are based among others in the existence of strong traditions, culture, beliefs and values of the local people as well as their tremendous respect, appreciation and understanding of