# Environmental protection using Indigenous knowledge (IK) methods and skills for sustainability: Case Study in the Kavango East Region

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***Abstract***

*The analysis presented in this study draws from a theoretical framework that sees indigenous knowledge (IK) and discourse as important features of ethno–science publication in Namibia. The study aims to make a meaningful contribution to an ongoing debate about IK in Namibia and the world over; the use of IK in the construction of knowledge about ethno–science; analysis and exploration of IK. As such the study looks at the process of authenticating ethno – scientific argument, knowledge and skills, providing clear understanding of how IK is used to protect the environment.*

*The study of IK has been traditionally concerned with rural activities such as farming methods. The findings and knowledge produced by some IK studies have been arranged as a system of perception rather than hard science knowledge. The notion put forward is that science rests on facts and evidence, and as such it is argued that it is detached from humanistic rural activities. However, this research paper tries to provide an investigation and exploration of the possible significance of IK in terms of environmental protection. Similarly, this research paper offers insightful perspectives concerning IK in relation to other 'hard' scientific knowledge.*

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*The study involved 10 adult informants, 5 females and 5 males. In terms of information collection, the following research instruments were used: questionnaires, observation and focus group discussion.*

*It is evident from the findings presented in this research paper that the IK methods and skills employed seem to have worked in protecting the environment under study. In terms of wetlands and vegetation there is compelling evidence that they are still extant, a sign that the environment has been protected despite the absence of modern scientific techniques among the local inhabitants.*

**Key words:**

*Indigenous Knowledge (IK), Scientific Knowledge, Ethno-Science, Tradition, Protection, Environment, Sustainability, Myth, Ekongoro, Emumi.*

## INTRODUCTION

The two Kavango regions, East and West are located in North-East Namibia, sharing borders with Angola and Botswana. These two regions were split in 2013 and currently form two of Namibia's fourteen political regions. These regions are home to woodland savanna with different types of vegetation and wetlands. The forests and wetlands need to be protected for sustainability of the environment. It is against this backdrop that this study was carried out in order to explore and investigate the significance of environmental protection from an IK perspective.

The importance of this study is to document Indigenous Knowledge Systems (IKS) and strategies to harmonise modern methods of environmental protection with that of Kavango East and West traditional methods. Conversely, the study has the potential to create awareness among the inhabitants about the significance of environmental protection in the societies. In this way people learn to protect their environment for sustainability. In addition it adds value to the existing body of knowledge and equally provides a platform for policy makers to adopt the diverse methods of protecting the

environment.

Recent research (Southern African Development Community, Regional Environmental Educational Program [SADC REEP], 2011, p. 39) has shown that human societies have for centuries obtained materials such as timber, rubber, food and medicinal plants from forests. Forest trees and plants also absorb carbon dioxide, which is toxic to humans, and use it to manufacture food during photosynthesis. In the process they release oxygen that we breathe in and is used for the respiration. In addition these forest trees and plants keep the soil intact, consequently preventing soil erosion, and through the process of transpiration, they also release water vapour which contributes to the hydrological cycle.

## LITERATURE REVIEW

Environment according to Aucamp (2010, p. 1) is defined 'as world we live in, work in and play in, and includes all living and non-living things that we encounter on earth'. In support of this definition, the South African constitution (Republic of South Africa, section 24 of 1996) is one of the few constitutions that prescribes the protection of the environment as a constitutional right. This constitution thus provides not only for the natural environment, but also for the human, social and economic aspects of the environment, and introduces the principle of sustainable development. It defines the environment and sustainable development in South African National Environmental Management Act (Republic of South African, [NEMA] 1998) as follows: Environment means the surroundings within which humans exist and are made up of land, water, atmosphere, plant and animals, to mention a few. Sustainable development means the integration of social, economic and environmental factors into planning, implementation and decision making so as to ensure that development serves present and future generations.

The Republic of Namibia (2004) promulgation of water resources management, Act 2004 (Act No. 24 of 2004) of 23 December 2004 defines environment as the surroundings within which humans exist and that are made up of the land, water and atmosphere of the earth; micro-organisms, plants and animal life; any part or combination of the aforesaid; the physical, chemical and aesthetic properties and

conditions of the foregoing that influence human health and wellbeing. The same constitution defines sustainable development as a means of integration of social, economic and environmental factors into planning, implementation and decision making so as to ensure that development serves present and future generation.

Although the emphasis of most new legislation on the environment was mainly on the prevention of pollution since the adoption of the Environmental Impact Assessment (EIA) in United States of America (US) in 1969, there was no mention of environmental protection and sustainability. The concept Environmental Impact Assessment (EIA) was only introduced in Southern Africa starting with Seychelles in 1994, and Namibia adopted the concept in 2004. The environmental management systems in Southern Africa are based on modern environmental protection and sustainability. The focus of this research paper is based on environmental protection and sustainability using IK systems. In the area under study the traditional practices and myths seem to been the centre of environmental protection and sustainability. Myths are traditional or legendary stories, usually concerning some being or hero or event, with or without a determinable basis of fact or a natural explanation, especially a story which is concerned with deities or demigods and explains some practice, rite, or phenomenon of nature. Examples of such myths were observed by Gluckman, 1951 (as cited in Reynolds, 1963, p. 67) whereby certain spirits such as Mwenda-njangula and Mwenda- lutaka which exist in Zambia are believed to be creatures in human form (they have halfhuman bodies and are fiery red), the limbs of one side of which are living and of the other side, of reeds covered with beeswax. The spirits live in dense bush and cannot come out into the light for fear of the wax melting. They are demons of the bush and the plain respectively and are of both sexes. Should one of these spirits desire a man or woman, it will try to kidnap him or her and can cause severe illness in a person. If a human has the misfortune to meet one of these spirits, there is a struggle. Should the human win, he is taught how to cure diseases, or some of his wishes are granted. These myths also exist in the area under study, where it is believed that forests are protected by a half-human, Emumi which is similar to Mwenda-njangula and Mwenda-lutaka.

There is a plethora of literature concerning environmental protection and IK, the world over. However, there is a dearth of

information on environmental protection using IK in the Kavango East and West regions. This concurs with the Nobel Peace Prize winner, Wangari Maathai, who decided to tackle Kenya's environmental problems by planting trees to mitigate destruction of the forest through timber cutting and cattle farming, one of the main contributors to the increase in greenhouse gases and global warming. Where people have failed to look after their forest, their land has become bare and barren.

Warren (1991) observed that IK is synonymous to traditional knowledge. He further argues that IK is different from international scientific knowledge, which is referred to as the 'Western system' where knowledge is generated through universities and government research centres. However, the problem with Warren's observation is that he limits his observation to seeing IK as forms of primitive ways of generating knowledge. Hobsbawm & Ranger (1983, p. 4) contend that traditional knowledge does not exclude innovation and invention. Ranger is supported by Mammo (1999, p. 16) who views changing norms as a form of invention rather than as static traditional practices.

Mawere, (2014) is equally in congruence with Hobsbawm et al. (1983) and Mammo (1999). Mawere postulates that IK is a set of ideas, beliefs and practices of specific locale that have been persistently used by its people to fully interact with their environment, including protecting that environment. It should be understood that developing IK skills to protect the environment does not involve prescribing set of procedures and rules in formal environment setting, but rather drawing skills and knowledge from wisdom and experience. As Busia (1964, p. 17) puts it, 'Traditional education sought to produce men and women who were not self-centred, who put the interest of group above personal interest'. These men and women were innovative and represented 'Think tanks' of the society.

Moreover, these indigenous skills of protecting the environment seem to have been sustained even in the pre-colonial era. The newly independent Namibian government was concerned about the protection and conservation of its biodiversity, as a result, a policy guideline to that effect was entrenched in Article 100 of the national constitution of the Republic of Namibia *(*Republic of Namibia) In addition, Article 100 states that all natural resources are vested in the State, unless otherwise legally owned. This Article is supported by

Article 95 (l) which stipulates that:

The state shall actively promote and maintain the welfare of the people by adopting policies which includes the maintenance of the ecosystems, essential ecological process and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefits of all Namibians.

The inhabitants of then Kavango could have settled in the area under study way before the founding of the international convention of wetlands. To substantiate this argument, Shiremo (2016, p. 12) observed that 'the first military to visit the Eastern part of Kavango region was Major Curt von François in 1891'. This is a sign that the inhabitants lived in the area under study way before the founding of the wetlands convention. It is evident that wetlands and forest have been extant and protected using the IK and traditional skills even though there is no documentation to authenticate this observation.

Internationally, recent research has revealed that over the past 50 years human activities have changed ecosystems more rapidly and extensively than at any comparable period in history with more than 60% of the world's ecosystem degraded (Millennium Ecosystem Assessment, 2005). In order for Namibia to protect its own environment, it has recognised the importance of making contribution to the global commons, by sanctioning the following Global Environment Instruments: Forest Principles signed at Rio in 1992 and convention on Wetlands (Ramsar) in 1995. However, it should be noted that in 1971 wetlands became the first, and so far, the only type of ecosystem to have their own international convention: convention of wetlands of international importance.

The underlying reasons behind the conventions were to highlight the importance of wetlands and forest, and why they should be protected. For the purpose of this research paper wetlands may be broadly defined as areas where there is surface water, shallow marine or terrestrial, permanent or ephemeral, as cited in the Ministry of Environment and Tourism, (2008). Forests in the Namibian context could be broadly defined as a large area of land covered with trees, shrubs, bushes, herbs and grass.

Terrestrial wetlands are all dependent on and influenced by rainfall, either directly or indirectly. Significantly, they are among the world's most productive ecosystems and are rich in biodiversity. It should be pointed out that apart from providing much needed water they also provide a number of essential goods and services to the people and animals living near them. Wetlands also provide significant economic, social and cultural benefits. Furthermore, they are important for primary products such as pastures, timber and fish; they also support recreational and tourist activities. They help reduce the impacts from storm damage and flooding, maintain good water quality in rivers, recharge groundwater, store carbon, help stabilise climatic conditions, control pests and are important sites for biodiversity. Whilst the evaporation rates are high throughout the country, there seems to be considerable regional differences in the average water deficit. The southern areas where the water deficits range between 2100 to more than 2500 mm per annum lose much more water through evaporation than the north-eastern areas. This is due to relatively high levels of annual precipitation in the different regions, as such The Kavango regions contrast sharply with the southern regions where water deficit is the highest. The forests are also important for the following major reasons:

**Watershed**

Forests serve as watershed because all water comes from rivers, lakes and forest – derived water tables. In addition some rivers running through forest are also kept cool and from drying out.

**Habitat and Ecosystems**

Forests serve as a home to millions of different animals which form part of food chains. All these different animals and plants are called biodiversity and their interaction with one another and their physical environment is what is referred to as the ecosystem.

### Economic benefits

Forests are of vital economic importance to human beings and the country at large. They provide humans with timber and wood which are used in all parts of the world. Forests also provide tourism income when people visit to see best of nature.

### Climate control

Forests help regulate atmospheric temperatures through a process called evapo-transpiration. Additionally, they enrich the atmosphere by absorbing carbon dioxide and other greenhouse gases. They produce oxygen which is used for respiration.

## METHODOLOGY

The research was exclusively conducted in the selected terrestrial wetlands and forests in Kavango East and West regions situated in the north-eastern parts of Namibia. The study was conducted from a social-philosophical paradigm where the IK is at the centre of knowledge interpretation. The study involved 10 adult informants, 5 females and 5 males from various locations such as Mavanze, Kasote, Sharukwe, Sauyemwa and Ekongoro Youth Centre (now Maria Mwengere Environmental Centre), while observations and focus group discussions were used to collect data and a camera was used to capture images of the wetlands and forest. Lastly, a plethora of literature on environmental protection and IK was meticulously reviewed and examined.

## RESULTS AND DISCUSSION

The results and discussion in this paper address the following:

### A) The concepts of Ekongoro and Emumi

The research reveals that the concept of Ekongoro and Emumi are effective strategies for environmental protection. As revealed by the informants, Ekongoro ‘exists’ in wetlands while Emumi is believed to

live in the forest. The inhabitants do not destroy the wetlands and the forest because they fear the presence of Ekongoro and Emumi respectively. As a result of this fear the terrestrial wetlands and forest are inadvertently protected.

**Figure 1 Wetlands (Mavanze Village). Photo: Christina Utete, 7 July 2016**

The picture illustrates an abandoned mahangu (millet) field near a stream. The informants explained that the presence of Ekongoro in the stream has caused many crop farmers to abandon the areas. The vegetation is recuperating as a result of this abandonment.

**Figure 2: Ekongoro, extracted from Ntunguru, Rukwangali Grade 4 Textbook (Kloppers & Nakare, 1991, p. 21).**

The concept of Ekongoro exists in the school curriculum of the indigenous languages in the primary schools. The picture above illustrates the concept of Ekongoro as it is taught in schools. Additionally the Ekongoro concept was entrenched in the political discourse of the colonial regime which resulted in the naming of the present Maria Mwengere Environmental Youth Centre.

The informants revealed that Ekongoro is 'non – human, similar to a very big snake, it is very long, it pushes and pulls water…' This concurs with Hinz (n.d ) who observed that Ekongoro owns the river and that 'Ekongoro is about 15 to 20 meters, and it pushes and pulls water…'

Informants 1 & 2 (Vilho N Shaningwa & Mathias M. Mudimbura, personal communication, 6 July, 2016) respectively informed the researchers that:

Ekongoro is a big animal that lives in the river that looks like a big snake with long horns. It used to vomit more fish during summer season. It [is] very scars [scarce] to be found and Ekongoro can change water to rainbow colours. If someone has done something wrong such as adultery or once you were [in a] dispute with elders then it will be angry with you. It's mostly found on the streams of the river (Madiva) and on deeper and still water (Mbiga/Sinseta). If you're in a canoe and commit the above mentioned points, it will hold the canoe, it takes time until senior elders come to talk to it (Kutondowera) and to offer (Siranda) white beads and some drops of fresh blood from a finger cut then it can release you, by pushing the canoe very hard to the land. Then the people should hold strongly the edges of the canoe, so that they cannot fall off. If it [is] not done it can swallow the people on the canoe by sinking. Once a time it happened at Kasivi village 1987 where Ekongoro vomited a lot of fish of the corner of the river stream (Nkondo). The fish were so powerless any one [could] come and pick fish from the water, the fish were just closer to the bank of the stream not on the centre of the stream. Even, now at Rupara mission hostel, it has history of (Ekongoro) events. Sometimes water can appear on the floor of houses, means that Ekongoro moved from the river to the land; even the Finnish missionaries have experienced that [*sic*].

.Additional information from informant 2 said that:

> Shadikongoro Village – the name is derived from the animal Dikongoro. A history of it that Ekongoro once moved from the river to the land. A practical evidence on the area of irrigation project. It was always wet.
>
> Sometimes Ekongoro can vomit a group of small fish called Sinduvi. These fish normally moves in opposite direction of river flow in a straight line (Momuzoro). It's scarce, not visible, (Kapialihadaguravantu) does not intimidate people but it is dangerous. It does not have problems with animals [*sic*].

Informant 3 (Haingura Hilde, personal communication, 6 July, 2016)

> One day we went to the river to catch fish, so when we got there the water was normal, so some of my friends decided that we should catch fish from Ediva [Terrestrial wet lands] then we took our Yikuku (fishing basket) we went into the Ediva and we starting catching fish then suddenly we felt the earth shaking and there were ripples on top of the Ediva. We became afraid and terrified… We ran out of the Ediva to the edge of Ediva… Someone shouted at us to stay calm and then we followed the instructions and remained calm and surprisingly we saw water up swelling, after a few seconds then the water became calm again… Again we saw a very shiny something like a snake and silver in colour. After a moment that thing disappeared, then there were lots of fish on top of the water… that is when we left the Ediva to go home as we were told by the very same person who shouted that it was safe to leave. Community members were informed to go and collect the fish that were floating on top of the water at the Ediva [sic].

The informants also narrated that the rainbow is also referred to as Ekongoro. They argued that Ekongoro does not only stay in water but can position itself across the sky when it is about to rain to collect water from the clouds to the wetlands or Kavango River. They further believe that terrestrial wetlands do not go dry because of the continuous supply of water by Ekongoro.

**Figure 2: Forest (Outskirts of Rundu) Photo: Christina Utete, 16 July 2016**

Figure 2 illustrates the woodlands savanna on the outskirts of Rundu. This is a typical example of the forest protected through customary law within the jurisdiction of VaSambyu traditional authority. The informants revealed that cutting down trees could result in heavy penalties such as paying in form of head cattle. Additionally the informants further revealed that apart from paying heavy penalties, cutting down or burning the forest could result in the killing of Emumi.

The account by the informants seems to be consistent with traces of place names in the areas under study where the name Shidikongoro, named after a geomorphological feature as suggested in the narration. This name is still in use up to date. Ekongoro, which today is known as Maria Mwengere Youth Centre, is still being largely referred to by informants as Ekongoro. For the informants, the area is very sacred because of the existence of the terrestrial wetland in the locality of the area.

Ekongoro is also said to be the guardian of the water, and of fish, a protector against pollution as well as sustaining the wetland. Although it is believed that Ekongoro owns the wetlands, the water resources management Act No. 24 of 2004 was passed by parliament and signed by the President in terms of the Namibian Constitution and published in terms of Article 56 of that constitution. Subject to this act the ownership of water resources in Namibia below and above the surfaces of the land belongs to the state.

Further, this research reveals that it is also necessary to note that the two ecosystems (wetlands and forest) are inextricably linked through the hydrological cycle. They are interdependent hydrologically and play a crucial role in preservation of water resources. A better understanding of the role that these bodies play in the hydrological cycle will enable us to consider more effectively these ecosystems when formulating polices and management practices to protect our water resources. It was also found out that the two ecosystems are linked to the following:

**Figure 3: Human linkages**

It emerged from the informants that the terrestrial wetlands provide services to the inhabitants as they use the water sources for laundry; they get fish for nutrients, temperature regulation and water for household consumption. Equally, terrestrial wetlands rely heavily on human protection and humans rely on the wetlands for survival. Apart from wetlands absorbing carbon dioxide from humans and humans absorbing oxygen from the wetlands, the relationship between the two is inextricably linked.

At other terrestrial wetlands, the informants stated that the movement of reeds signifies the presence of the Ekongoro. The laundry is only done in designated areas where Ekongoro does not attack anyone. It can be argued that there seems to be a symbiotic relationship between humans and this ‘enigma’ Ekongoro. As long as

local inhabitants as illustrated in the picture do not go where the reeds, are they will remain safe.

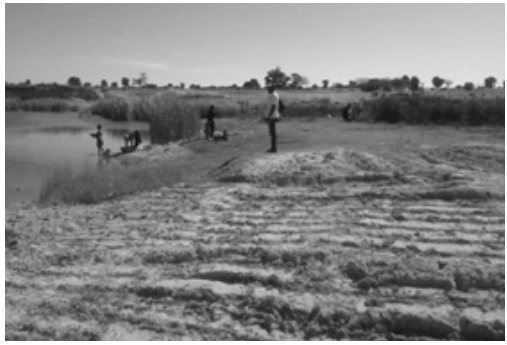

**Figure 4: Agriculture linkages**

The terrestrial wetlands are also used as a source of water for agriculture purposes. As illustrated in the picture, local inhabitants have developed gardens where they grow various crops for consumption and income. It is evident from this observation that terrestrial wetlands are more than stagnant water bodies but provide a significant role in hunger and poverty alleviation.

**Figure 5: Economic linkages**

The terrestrial wetlands are used as a source of water supply for infrastructural development such as road construction as illustrated in Figure 5. In addition, the local inhabitants catch fish and sell it for cash income and the companies that draw water from the water sources, pay a certain amount of money to the headman as a token of appreciation. As a result, that money will be invested back into the community for various purposes such as helping the poor and developing their area. Conversely, the very same companies that offer incentives to the communities are also willing to offer employment to the local residents especially the unemployed youth.

## RECOMMENDATIONS AND CONCLUSION

It can now be concluded that the myths of Ekongoro and Emumi are contributing towards the protection of the environment. As shown in the pictures, the terrestrial wetlands and the forests are still intact, showing that the myths are very effective. It seems the Ekongoro factor as demonstrated in Figure 1 is more effective than the Emumi factor. The area in the picture was once used as a Mahangu field but it seems the crop farmers have vacated the area due to the Ekongoro factor since there is a water source nearby. The Emumi factor seems to be more effective in the rural areas than in the outskirts of Rundu town, as some of the forests closer to town have been destroyed due to agricultural practices. It is recommended that more studies should be carried out in the areas of traditional myths to determine if there are more methods used to protect the environment. Since the Emumi factor seems to be little effective it is recommended that the inhabitants should be educated on how to protect the forests using modern practices.

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