ENVIRONMENTAL PROTECTION USING INDIGENOUS KNOWLEDGE (IK) METHODS AND SKILLS FOR SUSTAINABILITY: A CASE STUDY IN THE KAVANGO EAST AND WEST REGIONS

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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 on-going debate about IK in Namibia and the world over, the use of IK in the construction of knowledge about ethno-science, and to the analysis and exploration of IK. As such the study looks at the process of authenticating ethno-scientific arguments, knowledge and skills, providing a clear understanding of how IK is used to protect the environment.

The study of IK has been concerned with traditional rural activities such as farming methods. The findings and knowledge produced by some IK studies seem to have been arranged as a system of perception rather than real scientific knowledge. The notion put forward is that science rests on facts and evidence, and that it is therefore detached from humanistic rural activities. However, this research paper provides an investigation and exploration of the possible significance of IK forenvironmental protection. Similtaneously the paper offers an understanding of the place of IK in relation to so-called 'hard' scientific knowledge.

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The study involved 10 adult informants, 5 females and 5 males. Observations and focus group discussions were used as research instruments.

It is evident from the findings presented in this research that IK methods and skills employed worked towards protecting the particular environment under study here. There seems to be compelling evidence that wet lands and vegetation are still extant, a sign that the environment has been protected, despite the absence of modern scientific techniques among the local inhabitants.

Introduction and background

The East and West Kavango regions 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 found in the woodland savannah comprising various types of vegetation and wetlands. The forests and wetlands need to be protected for environmental sustainability. Against this backdrop this study was carried out in order to explore and investigate the significance of environmental protection in these regions 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 these 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 be aware about 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 obtained materials such as timber, rubber, food and medicinal plants from forests for centuries. Forest trees and plants 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 used for the respiration. In addition, these forest trees and plants keep the soil intact to avoid soil erosion and they also release water vapour through the process of transpiration which contributes to the hydrological cycle.

Literature review

Environment is defined as "the world we live in, work in and play in, and includes all living and non-living things that we encounter on earth" (Aucamp 2010, p. 1). In support of the aforesaid definition, the

South African constitution (Republic of South Africa, Section 24 of 1996) is one of the few constitutions that prescribe 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 aspect of the environment, and introduces the principle of sustainable development (though phrase "sustainable development" does not appear in the constitution). The environment and sustainable development is defined in the South African National Environmental Management Act (Republic of South African, [NEMA], 1998) it the following terms (paraphrased): Environment means the surroundings within which humans exist and are made up of land, water, atmosphere, plant and animals, to mention a few. While 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.

In addition, in the Republic of Namibia (2004) Water Resources Management Act 2004 (Act No. 24 of 23 December 2004), environment means the surrounds 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 and properties and conditions of the foregoing that influence human health and wellbeing.

Even though 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, no mention is made of environmental protection and sustainability. The EIA concept was only introduced in southern Africa starting with Seychelles in 1994 and Namibia adopted the concept in 2004. The environmental management systems in southern African are based on modern environmental protection and sustainability principles. Therefore the focus of this research paper is on environmental protection and sustainability through IK systems. In the area under study, traditional practices and myths, which are traditional or legendary stories, usually concern some being or hero or event, with or without a determinable basis of fact or a natural explanation, especially one that is concerned with deities or demigods and explains some practice, rite, or phenomenon of nature that seems to be the centre of environmental protection and sustainability. Gluckman (1951, as cited in Reynolds, 1963, p. 67) studied examples of such myths in which certain spirits, such as Mwenda-njangula and Mwenda-lutaka, believed to have existed in Zambia, were purported as creatures in human form (half-human bodies and fiery red), with the limbs of one side are alive and those of the other side made of reeds covered with

beewax. The spirits live in dense bush and cannot come out into the light for fear of the wax melting. They are demons of both the bush and the plain and are of both sexes. Should one of these spirits desire a man or woman it will try to kidnap him or her, and they can (at the least) become severely ill. If a human has the misfortune to meet one of these spirits, a struggle will ensue. Should the human win, he/she is taught how to cure the diseases, or some of their 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* who is similar to Mwenda-njangula and Mwenda-lutaka.

There seems to be a plethora of literature concerning environmental protection and IK the world over. However, there seems to be a dearth of information on environmental protection using IK in the Kavango East and West regions. This concurs with the actions of the Noble Peace Prize winner, WangariMaathai, who decided to tackle Kenya's environmental problems by planting trees. This was due to the destruction of the forest for timber and cattle farming resulting in the increase of greenhouse gases and global warming. This has resulted in situations where people have failed to look after their forest and their land became bare and barren.

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

Mawere (2014) agrees with Hobsbawm et al. (1983) and Mammo (1999) by postulating that IK is a set of ideas, beliefs and practices of a specific locale that has been used persistently 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 procedures and rules to the formal environment setting, but instead, it draws drawing skills and knowledge from wisdom and experience. Busia (1964, p. 17) puts it as follows: "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 also concerned about the protection and conservation of its biodiversity and as a result a policy guideline to that effect was entrenched in the Constitution Republic of Namibia, Article 100 *(*Republic of Namibia). In addition, according to Article 100 of the Namibian constitution all natural resources are vested in the State, unless otherwise legally owned. This Article is supported by Article 95 (l) which stipulates:

> "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 benefit of all Namibians."

The inhabitants of the 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 Francois in 1891". This is a sign that the inhabitants lived in the area under study before the founding of the wetlands convention. It is evident that wetlands and forests have been extant and protected seemly using IK and 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 during this period (Millennium Ecosystem Assessment, 2005). In order for Namibia to protect its own environment, it has recognised the importance of making contributions to the global commons by sanctioning the following Global Environment Instruments: Forest Principles signed at Rio in 1992 and the Convention on Wetlands (Ramsar) in 1995. However, it should be noted that in 1971 wetlands became the first, and thus far the only, type of ecosystem to have their own international convention: The convention of wetlands of international importance.

The reasons behind the conventions were to highlight the importance of wetlands and forests, 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 (see the Ministry of Environment and Tourism, 2008). Whereas 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 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 2500mm 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 and this contrasts sharply with 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 forests keep the forests cool and prevent their 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 environments are 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 explored and used in all parts of the world. They also provide tourism income when people visit to see the 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 green-house gases. They also produce oxygen, which is used for respiration by other living species, including humans.

Methodology

The research was exclusively conducted in the selected terrestrial wetlands and forests in the Kavango East and West regions of 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 forests. 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:

The concepts of Ekongoro and Emumi

Ekongoro is non-human, similar to a huge snake, with horn-like features, about 15 to 20 meters long, and pushes and pulls water. The English equivalent is the rainbow.

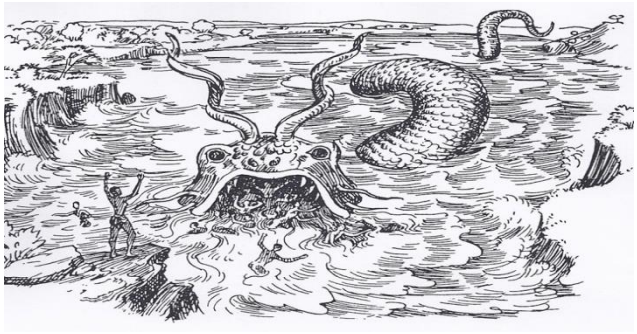
Emumi is a symmetrically half-human with one leg, one arm, one eye, and one ear.

The research reveals that the concepts 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 forests because they fear the presence of Ekongoro and Emumi. As a result of this fear the terrestrial wetlands and forests are inadvertently protected.

Wetlands

Picture 1 by Christina Utete, 7 July 2016 (Mavanze Village)

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.



Extracted from Ntunguru, Rukwangali Grade 4 Textbook (Kloppers & Nakare, 1991, p. 21)

It was also found that 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 now 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, July 6, 2016) respectively informed the researchers as follows:

"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 very scars to be found and Ekongoro can change water to rainbow colours. If someone has done something wrong such as adultery or once you were 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 senor 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 strongerly 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 at lot of fish of the corner of the river stream (Nkondo). The fish were so powerless any one 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:

> "Shadikongoro village the name is derived from the animal Dikongoro. History has it that Ekongoro once moved from the river to the land. There is 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). Its scarce, not visible, (Kapialihadaguravantu) does not intimidated people but it is dangerous. It does not have problems with animals" (sic).

Informant 3 (Haingura Hilde, personal communication, July 6, 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 ri-

ver. They further believe that terrestrial wetlands do not go dry because of the continuous supply of water by Ekongoro.

Forest

Picture 2 by Christina Utete, 16 July 2016 (Outskirts of Rundu)

The picture illustrates the woodlands savannah on the outskirts of Rundu. This is a typical example of the forest protected through customary law within the jurisdiction of the VaSambyu traditional authority. The informants revealed that cutting down trees could result in heavy penalties such as paying in the form of head of cattle. Additionally, the informants 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, and Ekongoro, which today is known as Maria Mwengere Youth Centre, is still being referred to by informants as Ekongoro. For the informants, the area is sacred because of the existence of the terrestrial wetland within the area.

Ekongoro is also said to be the guardian of the water and fish, and a protector against pollution as well as sustainer of the wetland. Although it is believed that Ekongoro owns the wetlands, the Water Resources Management Act, No. 24 of 2004, was passed by the parliament and signed by the President in terms of the Namibian Constitution and published in terms of Article 56 of the constitution. Subject to

this act, the ownership of water resources in Namibia below and above the surfaces of the land presides with the state.

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

Human links

Picture 3 by Christina Utete, 16 July 2016 (Outskirts of Rundu)

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; and they use water for temperature regulation and for household consumption. The continued existence of terrestrial wetlands is dependent on human protection and, reciprocally, humans rely on the wetlands for survival. Apart from wetlands absorbing carbon dioxide from humans and humans absorbing oxygen from the wetlands, the two are inextricably linked in many other ways.

With respect to 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. There thus seems to be a symbiotic relationship between humans and this 'enigmatic'

Ekongoro. As long as local inhabitants do not go where the reeds are they will remain safe (see **Picture 3** as illustration).

Agriculture links

Picture 4 by Christina Utete, 16 July 2016 (Outskirts of Rundu)

The terrestrial wetlands are also used as a source of water for agriculture purposes. As illustrated in the picture above, 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 just stagnant water bodies; they also play a significant role in hunger and poverty alleviation.

Economic links

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Picture 5 by Christina Utete, 16 July 2016 (Outskirts of Rundu)

The terrestrial wetlands are used as a source of water supply for infrastructural development, such as road construction, as illustrated in **Picture 5**. In addition, the local inhabitants catch fish and sell the fish for 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. That money will be invested back into the community for various purposes, such as helping the poor and developing their areas. Further, the 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 environment is being protected using the myths of Ekongoro and Emumi. As shown in the pictures the terrestrial wetlands and the forests are still intact proving that the myths are very effective. It seems the Ekongoro factor as demonstrated in **Picture 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 near-by. The Emumi factor seems to be more effective in the rural areas than in the outskirts of Rundu town as some of the forests 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 less effective it is recommended that the inhabitants should be educated on how to protect the forests using modern practices.

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