

Indigenous Knowledge in Water and Watershed Management: ‘Marakwet’ Conservation Strategies and Techniques

Grace Cheserek

School of Environmental Studies, Moi University
P.O. Box 3900 Eldoret, Kenya
Email gcheserek@yahoo.com

Abstract

Access to clean water is a basic human right. However, along the Kerio Valley in Kenya where the Marakwets people live, water is scarce and inadequate to meet domestic needs, that of livestock and nature. This has often resulted in competition and conflicts in the access to and use of water. The Marakwets have therefore developed, maintained and applied indigenous knowledge in the access and use of water to guarantee equal distribution of this very rare and yet basic commodity. This paper examines some of the strategies and techniques of indigenous knowledge used by the Marakwets in water and watershed management. The results showed that the Marakwets are endowed with indigenous knowledge that played a big role in the management of water and watersheds. It is therefore recommended that indigenous knowledge systems should be integrated in watershed management plans in arid and semi-arid lands and in the Kerio Valley in particular.

Key words: Indigenous Knowledge, Water Resource, Aridity, Marakwet, and Management.

Introduction

Stiles (1993), defines indigenous knowledge as the systematic body of knowledge acquired by local people through accumulation of informal experiences and intensive understanding of their environment in a given society. It is generally accepted that indigenous knowledge can be incorporated into the decision-making process and development activities to enhance their sustainability. Indigenous knowledge has been established beyond doubt in the cure of man–environment interactions. Indigenous knowledge stored in people’s memory has

also been widely applied to remedy situations where technology is lacking. Dietz (1987) noted that indigenous knowledge is stored and shared through songs, proverbs and stories.

Throughout Africa traditional communities practiced water conservation strategies particularly among pastoral communities that suffer from water scarcity for their livestock and domestic use. Kenya is classified as a chronically water scarce country with a fresh water endowment of only 647 cubic meters per capita (GOK, 2003). This is expected to decrease, if the resource base continues to diminish due to increased use of woody plants and trees, an increased population, water resource degradation, rainfall variability, droughts and floods (Adams et al 1997).

The Study Objectives

This study aims to expound the utilization of indigenous knowledge strategies and techniques by the Marakwet people in the management of water and watersheds. The study will look at the traditional methods used by the Marakwet community in management of water at household and community levels. The management of watershed was looked at a community level, both as a social and communal good.

An Overview of the Kerio Study Area

The study was carried out in Marakwet district, one of the fifteen districts that make up the Rift Valley province in Kenya. The district is subdivided into five divisional administrative boundaries and three topographical zones that run parallel to each other; the highlands, the escarpment and the valley. Altitude ranges from the highest point at 2700 metres –800 metres above sea level, with Kerio River as its main drainage (DDP, 1997). Rainfall is highly influenced by altitude and ranges from high (1100) in the highlands to low (750) in the valley. The Kerio valley watershed is managed by Kerio Valley Development Authority (KVDA) and is characterized by low rainfall, high temperatures and high evaporation rates (Saina, 1996). The main sources of water are springs, streams and seasonal rivers that all drain into River Kerio.

The People

The Marakwets are part of the larger Kalenjin speaking people that include Tugen, Keiyo, Pokot, Sabaot, Kipsigis, Okiek, Nandi and Terik. The Marakwets are traditionally agro-pastoralists in nature and balance between cultivation of drought resistant crops [sorghum, finger millet, and cassava], some traditional irrigation and keeping livestock [goats, sheep and cattle] for their livelihoods. Land tenure is basically communal ownership with clans being the form of identity. Like other pastoral communities women have little say in decision making over the disposal of property, but are given user rights. Livestock provide the Marakwets with food, dowry and serve as a bank used to evaluate family wealth, hence providing a social status in society. Any homestead without cattle is generally regarded as poor. Bee keeping and hunting are practiced to subsidize on food requirements particularly during dry seasons.

Indigenous knowledge among the Marakwets is stored in the memories of community elders and is passed on to younger generations verbally or through education techniques exercised during rites of passage (circumcisions), in ceremonies and rituals, in codified language structure and social interactions between group members.

Study Methodology

Purposive sample of four divisions that traverse through the three topographic zones were selected for study; then two divisions were randomly selected for study. These were Tunyo and Tot divisions. Random sampling was then used to identify household respondents for interviews. Samples of 220 were identified and included both males and females aged between 25-70 years.

The nature of the study was explorative. The respondents were interviewed while undertaking their daily activities using open-ended schedules. Structured questionnaires were administered to 35 key informants that included; government workers, community leaders, churches and NGO workers. Non-participant observation was used to observe minute water management techniques and group discussions were conducted to clarify information collected. The data was analyzed using descriptive statistics and cross tabulation, and further reported using tables and percentages.

Results and Discussions

Table 1, 2, and 3 show the age of respondents and their levels of education and occupations respectively:

Table 1: Ages of Household Respondents (*Cheserek, 2005*)

Age Bracket	Frequency	Percentages
25-35	44	20
36-45	60	28
46-55	82	37
56-65	21	9
66 and above	13	6
Total	220	100

Table 2: Levels of Education of Respondents (*Cheserek, 2005*)

Level of Education	Frequency	Percentage
None	35	16
Primary	119	54
Secondary	51	23
Post- secondary	15	7
Total	220	100

Table 3: Occupations of Respondents (*Cheserek, 2005*)

Occupation	Frequency	Percentage
Livestock keeping	73	33
Farming	62	28
Livestock and farming	46	21
Bee-keeping	4	2
Business	13	6
Formal employment	11	5
None	11	5
Total	220	100

Give a brief overview of the information shown on these tables and how they contribute to the understanding of the findings from the study. For example, are there any correlations of findings in relation to age or level of education?

Findings

The Marakwet community use water for drinking, cleaning, watering livestock, ceremonies, medicine and rituals. Based on these uses, the community developed and maintained strategies and techniques to utilize manage and conserve water and watersheds.

Local people including farmers, landless, labourers, women and pastoralists are the custodians of indigenous knowledge systems. Indigenous knowledge is thus tuned to the needs of local people and the quality and quantity of available resources. Water along the Kerio Valley is limited in supply and thus cannot meet the requirement for man, his livestock and wildlife. This often has resulted in conflicts over its access and use particularly during dry seasons. The Marakwets have therefore applied indigenous knowledge to guarantee equal access for all to this rare and yet basic natural resource.

The care of water bodies and water catchments is the responsibility of the whole community whereas water access and user rights are vested with the clan elders, who control accessibility and utilization of various water sources and water points. The Marakwet elders allocate water points to different clans and for different uses. During rainy season, ground water is used for livestock and wells are used for domestic needs. However, during dry seasons, when many streams have dried up and wells are operating at minimum, the elders raise an alarm for livestock to use dry season watering points, thus releasing the nearby wells for domestic use.

Migration among the Marakwets is an aspect of water management, whereby certain grass is saved for late grazing together with dry season wells. This is practiced to allow livestock to withstand the rigors of daily journeys between watering and grazing points. It is prohibited for any clan to graze these grasses during rainy seasons, with offenders being fined one bull and two cows. Migration has also been used as a tool to manage scarce resources by moving livestock to where water is relatively more, hence saving on depleting nearby water sources. Dietz (1987), noted that pastoral Pokot have adopted some survival strategies by moving their livestock during drought to up to 80 kilometres following certain grazing routes along more or

less reliable water points. Certain grass was saved for late grazing where they have established dry season wells.

Traditionally the Marakwet culture prohibited cultivation upstream around rivers and streams. This was enforced by their belief on the rain-god who attacked anyone destroying or interfering with the purity of water. Thus all cultivations were done one - two kilometres from the watercourse. This practice reduced siltation of rivers and streams thus ensuring that the communities downstream got their share of clean water.

Taboos were applied frequently to protect water bodies from contamination. Such taboos included not washing in or near the river or stream, lactating mothers were not allowed to come to water points and throwing objects into water bodies was prohibited. All these assisted the community to protect and manage their water and watersheds.

Occasionally the community practiced water rituals where and called upon the rain-god to give them rain. This was done by the community elders in form of prayers and sacrifices. They sacrificed cattle when there was prolonged drought and sheep or goats when rains delay their onset. The powers of the rainmakers were also invoked to communicate to the spirits to appease on behalf of the community and release rain.

The Marakwet prohibited the cutting of live trees and preferred dead wood, except in circumstances such as when mending a bee-hive or cattle trough. Most indigenous trees were also considered sacred and were used to perform rituals. This practice ensured trees grew to maturity hence, the preservation of water catchments.

The community also encouraged the planting of indigenous trees around rivers and streams to reduce direct interference from human activity and that of livestock and wild animals. Although this may have increased evapotranspiration, these trees ensured that water courses were not eroded during heavy rainfall. All water collecting points were fenced using either stones or wood, with frequent removal of dead matter [leaves] in the water body and draining excess water. This ensured the water remained clean and free from bad odours.

The Marakwet community elders practiced time allocation to all categories of users. Night hours and early morning was allocated to wild animals, mid morning to before midday was allocated to domestic use [fetched by women and girls], whereas midday and the rest of afternoon was allocated to livestock. This program ensured that all parties had access to water and reduced conflicts in water access particularly between humans and wildlife and livestock and wildlife. The Marakwet purified dirty water using local shrubs/herbs such as '*chepluswo*' (*maerua edulis*). Interestingly this technique [magic] worked and immediately the water became pure. Women also inserted burnt ash into water pots to settle any dirt and make the water sweet. Occasionally the water storage pots were cleaned and tried outside upside down. This technique allowed the pots to dry completely and last longer without breaking. In India, traditional methods of water purification existed whereby clarification of muddy water was done using natural coagulants such as nuts of *strychos potatorium* trees. It was believed that the seeds of these trees cleared muddy water by rubbing them on the inside of water vessels used for storage. Burnt coconut shells were poured in to wells with the belief that it will clean up water (Sontheimer, 1991).

Water fetching, carrying and storage were the sole domain of women, thus young girls were trained on how to carry and manage domestic water. The storage pots had a covering lid made of hide skin to protect the water from little pets such as cats from drinking and falling inside the pots. When fetching water from the pots, a small calabash was used to ensure the water was free from contamination/ dirt from hands. To strengthen and maintain proper hygiene in water handling, pregnant and lactating mothers were prohibited to fetch water on their own, until the babies were six months old.

The community practiced water and moisture saving techniques in food preparation. The respondents reported eating foods that require less water in preparation particularly during drought years. They also took baths less often, washed clothes occasionally, washed utensils immediately after use and drunk more water at the source and less at home. The left over from pots were given to young stock or recently calved cows. Mpiri (1995) noted that in Central Tanzania; Dodoma and Singida regions that are inhabited by agro-pastoralists and suffer

from water scarcity particularly in dry seasons, water melons are chopped and given to recently calved cows that could not join the rest of the herd in distant grazing and watering points.

The Marakwets have developed communal furrows that run parallel and supply water for domestic, livestock and irrigation downstream. The furrows structures include; take-off dams, sluices, terraces, bridges, aqueducts and furrow branches. These furrows were monitored and managed by clans and were organized into quota systems, whereby water was rationed, and each clan received water at certain times of the day. Water for domestic use and for watering livestock could be drawn from the nearest furrow regardless of ownership. The furrows are dug by young energetic boys/men and the whole community took responsibility for monitoring. The elders were responsible for the smooth running of these furrows and any individual found to disrupt the smooth flow of water was severely punished. In cases where an individual made another clan to miss their water share for a day, his clan was punished by missing out water the following day.

Concluding Remarks

Indigenous knowledge on water and watershed management among the Marakwets living in the Kerio valley has played an important role in managing water and watersheds that could have diminished given the harsh environmental conditions of a semi-arid to arid region. The main challenge facing this indigenous knowledge system is the deteriorating communication between the elderly and the young elites. This knowledge seems to lack concrete transmission from one generation to another. Another rising danger is the politics of cattle rustling that have made the area a no-go zone and have resulted in the displacement of thousands of people into the highlands. The community elders should be encouraged to pass this knowledge to the youth through ceremonies and cultural day's celebrations. This indigenous knowledge needs to be published for it to could be integrated into water management plans in arid and semi-arid lands in general and in the Kerio Valley in particular. The shrubs/herbs used by the Marakwets to treat water for domestic consumption need to be

investigated to establish their biological and chemical component and its possible effect on their users.

References:

- ADAMS, M.W., WATSON, E.E. AND MUTISO, S.K. (1997): *Water, Rule and Gender: Water Rights in an Indigenous irrigation System in Marakwet, Kenya*. In: Development and Change Vol.28, No. 4, October. Pp. 712-728.
- DIETZ, T. (1987): *Pastoralists in Dire Straits: Survival strategies and external interventions in semi-arid region at Kenya – Uganda border western Pokot (1900-1986)*. University of Amsterdam Press.
- GOVERNMENT OF KENYA REPORT (2003): *Strategic Water Plan*. Government Printers, Nairobi.
- GOVERNMENT OF KENYA PLAN (1997): *Republic of Kenya, Marakwet District Development Plan (1997-2001)*. Government Printers, Nairobi.
- MPIRI, D.B. (1995): *Restocking Rejuvenated Agro-Pastoral Areas and Sustainable Livestock Management*. In: T. Tandigar [Ed]. The African Pastoral Forum, Working Paper Series No. 4, January. Pp. 16-18.
- SALIH, M.A. AND ALI A.G. (1992): *Water Scarcity and Sustainable Development*. In: Nature and Resource VOL. 28, No. 1. Pp. 46.
- SAINA, C.K. (1996): *Drought and Famine Coping Strategies and Environment among the Keiyo living in Kerio valley, Kenya*. Unpublished M.Phil. Thesis, Moi University, Kenya.
- SONTHEIMER, M. (1991): *Women and the Environment: A Reader Crisis and Development in Third World*. Monthly Review Press, New York.