

Using Indigenous Knowledge for Drought Management and Weather Predictions in West Pokot County, Kenya

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Abstract: *West Pokot County is among the 23 Counties that experience chronic droughts exacerbated by the changing climate which threatens food security and livelihoods in ASAL areas of Kenya. The main objective of the study was to examine the use of indigenous knowledge in managing drought and weather predictions in West Pokot County for enhanced disaster preparedness. The study used descriptive research designs. Respondents were selected through random and purposive sampling methods. Questionnaires were used to collect data from 398 respondents randomly selected from different strata of the stakeholders in the drought management and food security sector in the county. The results show that 23% of the respondents believed in examination of goat intestines whereas 10% believed that observation of the position of stars prepared them before the onset of rains or drought occurrence thus warning communities of impending disaster. It was further noted that 3% of the respondents believed that animals behavior signaled onset of rains. These results are useful in developing drought mitigation measures to reduce risks from drought and enhancing the communities' resilience to drought and food insecurity. The results can further be used in promoting indigenous and science based knowledge in drought management, early warning and preparedness, which could reduce the risk posed by drought and planning of agricultural activities to mitigate against food insecurity, through crop failure in West Pokot County.*

Key Words: *Indigenous knowledge, Early warning system and Weather prediction*

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I. Introduction

Drought is one of the hydrological hazards that can pose serious global threat to livelihoods, environment, vegetation cover and realization of sustainable development. Coping with drought hazards can be enhanced by developing strategies that aims at reducing the vulnerability of communities in drought-prone areas. Community resilience is enhanced either through altering or strengthening their land use and farming practices as well as implementing programmes that promote water availability and food security, which also enhances poverty alleviation (Kandji, 2006). Indigenous knowledge is still intact among indigenous or local communities in many parts of Africa. This is why UNEP together with partners in Kenya, South Africa, Swaziland and Tanzania conducted a study in 2004 to provide information on the use of indigenous knowledge in environmental conservation and natural disaster management in these four countries (UNEP, 2006).

The communities have a vast body of knowledge on prediction impending drought, through early warning system. For instance, in the field of prediction and early warning of disasters, the Luo community in the Lake Victoria basin had a large number of climate monitoring indicators that enabled them to tell such things as the right time to start planting in anticipation of the rains or to preserve and store food in anticipation of a dry season (Briggs, 2005).

The communities in West Pokot County face many natural hazards, but the major ones are drought related which invariably cause famine, food insecurity and poverty. However, these communities have devised a variety of measures such as growing drought-resistant crops and early-maturing indigenous crop varieties, gathering wild fruits and vegetables, wetlands cultivation, livestock diversifying and herds splitting, which have enabled them to survive climatic hazards with little or no support from the outside world (UNEP, 2008). Additionally, these communities are well aware of the disasters that face them and in most cases have the knowledge and administrative structures to cope up with them. At the same time, they know that a well-conserved environment helped them reduce risks associated with natural disasters (Esikuri, E.E., 2005).

The communities in the areas of study have used a variety of innovative, effective, and in some cases unique indigenous knowledge approaches to environmental conservation and social safeguards. Some of the approaches, such as shifting cultivation, mixed cropping, intercropping and transhumance were common in

these places. However, many of the approaches were peculiar to the local environments and cultures and could not easily be replicated elsewhere (Edje, 2004).

A good knowledge of cultivated indigenous cereals plays an important part in food security, as do knowledge in foods that grew in the wild. In particular, knowledge of drought-tolerant seeds and early-maturing crops is critical. Using such indigenous knowledge, farmers were able to make a living even in harsh environments. Crops like cassava, cocoyam's, pigeon peas, finger millet, sorghum, bulrush millet, cow peas, bambara groundnuts and sweet potatoes were well known for their ability to produce good yields even under harsh climates (Lalonde, 1993). Other food security measures included diversifying livestock to ensure that some livestock species survived even under severe environmental conditions. Herds' splitting was also used to reduce or spread the risk of livestock loss, if all the animals are kept together, particularly during dry or drought periods, the risk would be greater. Cows used for milk production were also kept near the homestead where the majority of the members of the pastoral families, particularly women, children and the elderly, were living. The herds-splitting also reduced grazing pressure on forage near the homestead and improved foraging conditions for animals producing milk for the most vulnerable members of the family (Kihupi, 2000). Food security was assured by the application of many indigenous knowledge practices such as the use of indigenous seeds, cultivation of drought-resistant crops, mixed cropping, valley farming, livestock diversification, harvesting wild fruits and berries, food storage and preservation (Larson, 1998). Growing of short season crops that can evade drought or survive limited rainfall amounts (indigenous) rely on camel and goats milk, especially for young and aged in time of extreme drought events, practice of bee keeping and sale of wild fruits to buy maize (Kipkorir *et al.*, 2013). This study aimed at examining the use of indigenous knowledge in managing drought and weather predictions in west Pokot County for enhanced disaster preparedness.

II. Materials And Methods

2.1 Study area

The study was carried out in West Pokot County that is one of the 14 Counties in the Rift Valley region. It is situated in the North Rift along Kenya's Western boundary with Uganda border. It borders Turkana County to the North and North East, Trans Nzoia County to the South; Elgeyo Marakwet County and Baringo County to the South East and East respectively. The County lies within Longitudes 34° 47' and 35° 49' East and Latitude 10° and 20° North. The County covers an area of approximately 9,169.4 km² stretching a distance of 132 km from North to South (Figure 2.1). Pokot community is the predominant community in the County, Sangwer is the second largest community, and the Turkana, Luo, Kikuyu and Luhya are the minority in the county. The main social-economic activities in the West Pokot County are pastoralist and agriculture. The County has four constituencies namely Kacheliba, Sigor, Kapenguria and Pokot south (NDMA 2013).

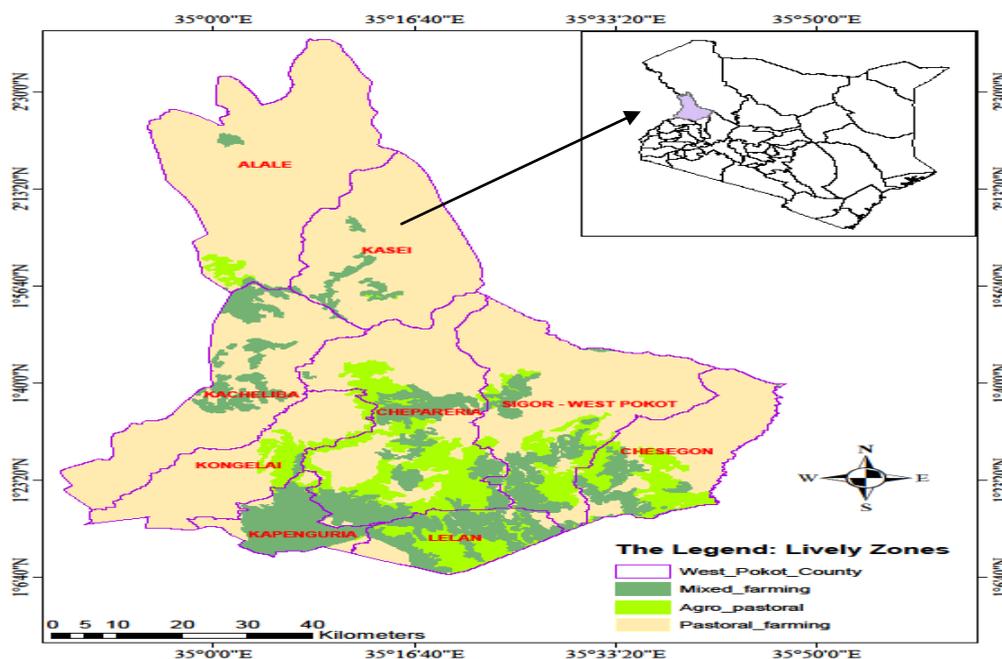


Figure 2.1 Map of west Pokot County

Source: Researcher2017

2.2 Research design and sampling strategy

The study adopted (Lambert, 2013) conceptual framework model that explores the food security learning framework which focuses on core and critical dimensions in realization of food security, The dimensions of the Framework are, improved livelihoods, with a focus on agricultural productivity, increased resilience of vulnerable populations, improved research, innovation and commercialization for agriculture and nutrition, expanded markets and value chains, improved policies and institutions for food security, enhanced nutrition and dietary quality, enhanced management of natural resources and adaptation to climate change, improved gender equality and women's empowerment.

2.2.1 Research design

The study employed descriptive survey and evaluation research designs. This study adopted stratified random sampling in determining the sample size for different wards, simple random sampling for departmental representatives and purposive sampling for key informants.

2.2.2 Sampling Strategy

The sample size of 398 respondents was obtained using a simplified formula (Yamane 1967).

$$n = N / (1 + N(e^2))$$

Where:

n=Sample size

N= is the total population

e= is the error margin,

The sample size consisted of 384 respondents from West Pokot Households, 12 key informants from NDMA, County line departments, UN representatives, NGOs representatives and 4 focus group discussions. Data collection methods included Primary sources including, focus group discussions (FGDs), Key informants, observation checklists, interview schedules and questionnaires. Secondary sources included use of relevant documents and reports. Quantitative data was analyzed using SPSS version 20 and MS Excel software packages.

III. Results And Discussion

3.1 Introduction

The study sought to examine the indigenous knowledge on drought management in West Pokot County. The study investigated the existing local-based knowledge on drought prediction and early warnings employed in West Pokot for drought preparedness. The respondents in this objective included the Council of elders, chiefs, village elders and the NDMA officers.

3.2 Use of Indigenous Knowledge in Drought Management in West Pokot County

Utilization of local knowledge in reducing the adverse impacts of drought through provision of early warning information to the affected populations was an important finding. Early warning information builds the resilience of the community to perceived hazards through developing their coping mechanisms. It was found that communities within the study area which is prone to drought occurrences still use indigenous knowledge in managing the effect of drought, Table 3.1. Early warning measures based on inherent indigenous knowledge enabled the community to reduce the impacts or develop resilience for any foreseen natural disaster. The results reveal that 23% of the respondents believed that examination of goat intestines and observation of the position of stars prepared them before drought strikes, thus warning them of impending disasters. About 3% of the respondents rely on plants characteristics as an indicator of the anticipated climatic condition for example the onset of the rains which are preceded by shading of leave for *korkorwo* (*Evrytherina*

Abbyssinica) and *Sirioch* (*Bothriocline fusca*) tree species whose accuracy is in weeks (1-2 weeks). On the other hand 3% of the respondents indicated movement of the butterfly and birds as a sign of onset of rain.

Table 3.1 Indigenous knowledge indicators for weather and climate in West Pokot County

Category of indicators	Indigenous/ Botanical Name	Period Onset of rain	Period	Users (%)
Plants characteristic	Korkorwo (<i>Evrytherina Abbyssinica</i>)	Flowering on onset of the Rain	1-2 weeks	3
	Sirioch (<i>Bothriocline fusca</i>)	It shades leaves before onset of rain, Flowering (red) on the onset of the Rain	1-2 weeks	6
Animals	Examination of goats intestines	Predication from Examination	2-3 weeks	23

Category of indicators	Indigenous/ Botanical Name	Period Onset of rain		
			Period	Users (%)
Animals behavior	Animals behavior	It takes one month before onset of rain		4
	Croaking of frogs	A sign of joy as rain starts, planting of crops	1-2 weeks	2
	Movement of butterfly and birds	It's a sign of joy as rain Starts and new flowers emerge	1-2 weeks	3
	Mating of goats	Increased mating of goats indicates more rain in the coming season	One month	2
	Appearance of red ants,	Rain reduce high temperature for easy movements of safari ants	1-2 weeks	2
	Migration of Elephants	Migration from their park means that they are running away from drought and when they start coming back then rain is about that start	2-4 weeks	5
	Animals behavior	They refuse to go and graze in a nearby pasture while preferring to stay near water points after drinking	One month	3
	Climatic	Observation of position of stars	When male is above the female star, it was not going to rain	One month
Observation of moon position		When the new moon is surrounded by rainbow like color indicates it was going to rain that month	One month	10
Wind (southern wind)		Feeling of southern wind is sign of rain	1-3 week	8
Meteorological		Conventional weather and climate predications		30
High temperature at night		Was an indication of onset of rain	2-3 weeks	4

Source: Field data, (2017)

The respondents noted that croaking of frogs (2%) was an indicator of onset of rain while another 2% of the respondents indicated that increased mating of goats was an indication of onset of rain, 6% of the respondents indicated that migration of Elephants out of the game reserves was a sign of running from anticipated drought and into the park this indicated that it was about to rain and Elephants would enjoy good pasture by migrating back. Those respondents who base their predictions on animal behavior and body condition indicated that as the rainfall onset approaches, animals raise their noises southward as they enjoy southward wind that normally carries moisture which indicated that the rain was near.

Nevertheless 12% of the respondents depended on observation of the position and color of the new moon while 9% relied on observation of southern wind and thunderstorms. About 30% of respondents depended on the meteorological department for any information concerning the characteristics of rain. The study indicated that many of the respondents rely on the conventional sources of early warning systems as compared to those who understand the use of indigenous knowledge. The study further revealed that the respondents in West Pokot County understood plants characteristics that indicate either the onset of rain or the occurrence of a dry spell period.

This finding was supported by (Larson, 1998) who found Food security was assured by the application of many indigenous knowledge practices such as the use of indigenous seeds, cultivation of drought-resistant crops, mixed cropping, valley farming, livestock diversification, harvesting wild fruits and berries, food storage and preservation (Kipkorir *et al.*, 2013) noted that growing of short season crops that can evade drought or survive limited rainfall amounts (indigenous) rely on camel and goats milk, especially for young and aged in time of extreme drought events, practice of bee keeping and sale of wild fruits to buy maize.

The results from this study show similarities with those from a study carried out by Kipkorir *et al.*, (2011), whose results revealed indicators such as flowering of *sirioch* tree species (*Bothriocline fusca*), observation of wind flow direction, migration of birds and shading of leaves by some trees, are used to predict the onset of rains in Nandi and Keiyo counties in Kenya. When these indicators are observed, land preparation is finalized and followed by dry sowing using seed broadcasting techniques. Unlike plant based weather forecasting, only a few indigenous 'experts', are considered to have the skill of reading different signs of goat intestines to forecast weather, conflicts and others disasters. Conversely, from available information the practice of intestine reading and interpretation is used by the Pokot people to predict climatic characteristics. One of the respondents' Pkwanyany (intestine e reader) that

"Indigenous experts look at two parts of the internal organ of goats. These are large intestines (muu-) and small intestine, (Kwanyan). When the food substance, in the process of digestion, in the small and large intestines is small, medium and large, forecasts will be made for drought, reduced rainfall and a normal rainfall season respectively. Whether the forecasted drought would be mild or harsh is inferred in direct

proportion to the size of food in the small and large intestines”.

The results from this study were consistent with those of Lusenoa *et al.* (2002), where the indigenous ‘experts’, called *Uchu*, use the skill of reading different signs of animal intestines to forecast weather, social or individual fortunes and the prospect of peace and conflict from local to global levels. All domestic animals, except cats, dogs, chicken and equine are slaughtered for weather forecasting irrespective of their sex, type and age. However, a more precise forecast is believed to be possible from the intestine of a female animal, preferably cattle obtained from that locality. The reliability of weather forecasting based among the Pokot community is based on intestine reading by *pkwanyan* (expert).

Besides, there are no sexual or dietary restrictions on the *Uchu* to succeed in the reading and interpretation of animal intestines. Despite the use of goat intestines in many communities, Getechwa (2015), argues that all domestic animals, except cats, dogs, chicken and equine are slaughtered for weather forecasting irrespective of their sex, type and age among the Boran, but for Pokot community it was only goat intestines that were used. The study further reveals the difficulty of explaining how intestine readings are used for weather forecasting since the skill is kept secret. The Pokot Community however indicated that the examination of goats’ intestines was open to everyone in order to promote intergenerational transfer of knowledge.

3.2.1 Reading of Animals Behavior and Body Condition

This study reveals that among the Pokot community, specific body conditions and behaviors of animals during resource abundant times give clues about the future weather events. A future drought is forecasted if cattle display behaviors such as being calm and sleeping in the pen very close to one another, refusing to go and graze in a nearby pasture while preferring to stay near water points after drinking, losing appetite for grass and salt, and not only do bulls lack interest in mating, but also isolate themselves from the herd by staying in the nearby bush and showing reluctance to return to the pen. Likewise, other cattle body conditions regarded as signs of a future drought are: becoming thinner with erected skin hair; their bellies never look full no matter how well they are fed; they defecate and urinate while in sitting position; and the amount of dung becomes smaller although they consume enough like other times. This study have similar findings with (Getechwa,2015) who noted that, a future drought is forecasted among the Boran community if cattle display certain behaviors, example is they become calm and sleep in the pen very close to one another and they refuse to go and graze in a nearby pasture while preferring to stay near water points after drinking.

The study further indicated that animals lick each other’s body, wonder around villages in search of bone to eat, they display a relaxed mood and get away from water points after drinking. They show normal sexual desire and the bull visits many cows within a short period of time. The study agrees with (Speranza *et al.*, 2010), who stated that Veterinary scientists hold views that partially contradict and partially agree with indigenous explanations of the body languages and behavior of cattle. On one hand, they seem to support indigenous views, when for instance they note that animals could naturally perceive and respond to the incoming weather condition, which is regarded as a central feature of survival strategy. In fact, some veterinarians are of the opinion that animals can perceive future natural phenomena more sharply than modern technology sources. Thus, from a veterinary point of view, sensing future developments and making physiological and behavioral changes is a central element of animals’ survival instinct. For instance, cattle can prepare themselves for future harsh conditions by reducing their appetite for food and mating. Other veterinarians attribute animal behavior and body conditions, traditionally regarded as indicators of future drought, to disease and environmental stress.

There are also wild animals and insects whose behavior is observed for weather forecast. If a ground squirrel (*Tuka*) is busy digging holes a normal rainy season is expected and vice versa. When an army of ants moves along a course of nearly a straight line, normal rainfall season is anticipated while drought will be forecasted if they are dispersed in search of food.

It emerged from focus group discussions that: *‘Migration of bees during the season of resource abundance from north to south is regarded as a signal of impending drought while normal rainfall will be forecasted if they migrate in the reverse direction’.*

The study shared some similarities with (Speranza *et al.*, 2010), who noted that when termites gather and store food it signifies an impending drought, but if they are busy building hills, gathering and storing food, a normal rainfall season is expected. It seems that the correlation of the above behaviors with their corresponding weather forecast is derived from a belief that those living things behave in ways that ensure their survival. Among the Borana herders, the varying tones of hyena screaming and bird song are employed to make forecasts about different things. But it is not possible to describe the musical or vocal scale of different voices of hyenas and birds here. However this is in line with previous studies by (Lusenoa *et al.*, 2002).

The study revealed that Croaking of frogs was a sign of joy because of the coming rain, therefore croaking of frogs indicates that rain was about to set in, movement of butterfly and birds is also used as an

indication of onset of rain. The Pokot community study and observe animal behavior since this is used as the indigenous way of predicting the onset of rains and information was disseminated through public meeting convinced by community elders. This study found that in Pokot community, observation of the position of the “male and female” star is used in predicting climatic characteristics. It was noted that among the community when the male star is above the female star, it was a taboo for “male” to “urinate” (raining) on the female star, this meant that, the community was expected to prepare for a dry spell of at least one month until when the “male” star was on the same level with the “female” star.

The study also revealed that the position and color of the new moon, especially when the new moon is pale brown indicated the likelihood of rain in that particular month. However, when the new moon is very bright it is an indication of dry spell. Moon crescent facing upwards indicates upholding water and when facing downwards is a sign of release of water in the next three days. It was realized that the direction of wind especially wind blowing from South to North and West to East, the community associates this direction of the wind with onset of rain. The study found out that most of the respondents agreed that the Meteorological services were the main source of early warning information regarding the onset of rains, through updates of frequent weather focus, most of the learned and civilized members of the community depend on Meteorological services as opposed to indigenous knowledge in predicting rainfall pattern, Table 3.2.

The findings were ranked basing on respondents views on specific category of indicator of early warning, this result indicated that all respondents had their specific indicator for early warning that inform community of impending hazard. The findings also show that community in West Pokot access early warning information that inform their preparedness action and plan that cushion community from threats of anticipated hazards b either migrating to safe area or taking necessary action.

Table 3.2 Ranking of early warning basing on respondent understanding in West Pokot County

Name	Indicator	Percentage (%)	Ranking
Plants Characteristic	Korkorwo (<i>EvryytherinaAbbyssinica</i>)	66%	1
	Sirioch (<i>Bothriocline fusca</i>)	34%	2
Animals	Movement of butterfly and birds	30%	1
	Examination of goats intestine	24%	2
	Animals behavior	17%	3
	Mating of goats	11%	4
	Appearance of red ants, rapidly	10%	5
	Crocking of frog	8%	6
	Migration of Elephants	5%	7
	Animals Body Condition	3%	8
Climatic	Meteorological	35.00%	1
	Observation of position of stars	21.50%	2
	Observation of moon position	18.00%	3
	Wind (southern wind)	14.00%	4
	High temperature at night	12.00%	5

Source: Field data, 2017

The results from this study relate to other similar studies such as (Roudier, 2014), who showed that onset of rains from a few days to a few weeks is indicated by an increase in night-time temperatures, shifts in direction of prevailing winds, particular phases of the moon and the appearance of strong whirlwinds, changes in smell of the environment, all highlighted as happening just before the rains.

The study agrees with (Daniela S. 2019) who found that use of physical environmental indicators such as dew and fog to predict drought among the community in Magondzwene in Chibuto.

This study was in consistent again with Kagunyu *et al.* (2016) in which various signs were used by the community to predict the onset of rains 53% of the respondents stated that they observed the pattern of seven stars. The finding also found that the location of the stars was also an indicator of the amount of rain and how soon it would start. On the other hand, about a third (31%) of the respondents said that some trees produce flowers before it rains. They gave examples of *Acacia nilotica*, *Acacia tortillas* and *Balanites aegyptiaca*.

The study was also cemented by statement of Participants in one of the focus group discussion gave similar information as evidence by the following statement. ‘A few days before the onset of the rains,

Acacia trees start flowering. They also become very green'. Another 16% of the respondents stated that through observation of some birds' movement and the sound they made, there was an indication that the rains were about to start. However, the study stated that a few days before the onset of rains, domestic animals would refuse to enter their sheds and this behavior was interpreted to mean that it had rained heavily and the shed was flooded.

The study was supported by (Daniela S.2019) who found that weather and climate, despite farmers having mentioned using indicators such as very hot temperatures throughout the year, and the occurrence of thunder and lightning without rain, to predict drought, signs from wind (72% of the FGDs) and clouds (88% of the FGDs) were the most cited.

3.2.2 Examination of Animal's Intestines

Focus group discussions also revealed that elders could tell if it would rain by observing the intestines of a slaughtered goat and if their blood color was red, that was an indication that it would start to rain, but when the intestines color of a slaughtered goat was black, that was an indication that there would be either a drought or war. The study also revealed that the color and amount of blood observed on a certain section of the intestine is another sign used for weather forecasting. When that vessel has good amount of darker color blood, experts anticipated an excess rainfall leading to floods in the coming season. On the contrary, if the vessel contains less blood with a yellowish color, the forecast for the next season would be normal rainy season. The study agreed with (Lusenoa *et al.*, (2002), who stated that the severity of the drought is inferred in direct proportion to the amount of blood contained in the vessel; if no blood is seen the worst drought is expected.

3.2.3 Observation of Stars and Moon

The study found that communities in West Pokot observe stars and moon, although the study was not totally in agreement with Kagunyu *et al.*, (2016), there were partial disagreement for example among the Pokot community they observe two star that is the "female" and "male" stars, while Borana community look at particular patterns formed by stars which showed whether it would rain or not. Among the Pokot Community rainmakers are considered important people especially when dry spells prolong. Pokot people called rainmaker.....

The communities consult the rain makers, 'Kaghpolok' who perform some rituals and prayers to their super natural being, *Tororot* which is in agreement with Vijfhuizen (1997), who reported that in southern Africa, spiritual rainmaking ceremonies have been at the heart of many smallholder traditional societies and their interaction with nature when inducing rain and blessings in the agricultural enterprise. Ritual performers would conduct prayers, use medicine portions, brew and drink traditional beer, dance under trees among other activities in manipulating the start of rains. These acts were known for yielding positive results to the autochthonous people. The success of the performed rituals was guaranteed because they were conducted in a deeply rooted and synchronized cosmological condition.

The role of indigenous knowledge was useful in predicting drought, hence communities prepares by initiating drought risk reduction strategy to food security. For example storing of guard milk and honey, livestock off-take, selling of healthy bulls and purchase enough food that could sustained them throughout drought period. The indigenous knowledge on drought management and food security uses methods that pose low risks to the environment. For instance, before the popularity of industrial insecticides, plant derivatives were used by local people for insect control in crop production, Plant derivatives are biodegradable and many cause no harm to mammals, (Domfeh 2007). To keep livestock healthy for milk and milk production, the Maasai in Kenya use a special method in testing for immunity in their local herds during rinderpest outbreaks affecting animals in neighboring villages. They collect blood from infected animals and smear it on the nostrils of their own herd. Animals that survive after this is done develop an immunity to the disease and cannot be re-infected, such local remedies highlight the importance of indigenous knowledge to agriculture and livestock production.

The study found that indigenous knowledge is a tool, actual or potential, for poverty alleviation. However, the study also showed that poverty often drove people to violate indigenous knowledge rules and prohibitions, for instance when they cut down trees in forests to make charcoal for sale so as to earn a living. The study pinpoints this problem particularly with regard to the shrines in the county. The study noted that food security and reduction of poverty are dominant themes in indigenous knowledge. In fact, one could probably say with certainty that indigenous knowledge existed mainly for mobilizing efforts and commitment around food production, poverty alleviation activities and conservation of natural resources.

IV. Conclusions

Indigenous knowledge has much potential in ensuring food security and alleviating poverty by certainly predicting when to store enough food (traditional food preservations techniques), split animal herds, cultivate certain variety of seeds, or put in place any measure that reduces the adverse impact of climate change in households' livelihoods. Noting that drought is the major contributing factor to persistent poverty in the county, this study suggests that the good practices, for instance, of food preservation used in traditional societies, such as drying food-fruits and vegetables, if popularized could "ensure food security and reduce dependency on food aid". The study also points out the importance of indigenous crops and plants in providing food security and alleviation of poverty. Food preservation and storage are important components of food security in traditional societies. The communities viewed nature, plants, animals, birds and insects in terms of their ability to provide for human needs and the indigenous knowledge.

The finding revealed that to achieve sustainable and more reliable drought preparedness and early warning, indigenous knowledge requires to be incorporated to scientific convention, in order to bring all stakeholders in common understanding of drought preparedness for enhancing food security. The study also reveals that, IGAD through resilience programmes has supported a number of engagements on scenario participatory planning that bring together, indigenous experts on exploring and mainstreaming early warning information for both scientific and indigenous expertise, and NDMA data analysis experts basically to synergize, the two levels of early warning.

V. Recommendation

There is need to increase the capacity of community on weather prediction for early response in order to promote community resilience to impacts of drought

Mainstreaming drought prediction for community risk reduction and prevention, especially drought prone Counties like West Pokot.

Strengthening community capacity on integration of indigenous knowledge and scientific on drought prediction and preparedness

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