

A Historical Assessment of the Marakwet Food Security Mechanisms c. 1850-2000.

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Abstract: The purpose of the study was to historically investigate food security mechanisms used in Marakwet District c.1850-2000. This study is important because, Marakwet District is a semi-arid area of the republic of Kenya, and that the area is periodically affected by drought and famine. The study traced food security mechanisms used by the Marakwet community that belongs to the larger Kalenjin community with specific reference to pre-colonial Marakwet. Oral traditions states that the Marakwet community had settled in Marakwet District by 1850 in small agnatic clans. The study adopted descriptive research design. The study used interview guide questions and focus group discussion questions as the main study instruments. Purposive sampling and snow balling method was used to collect data. The collected data was analyzed and the findings presented descriptively in a narrative form. The study established that the Marakwet community has over time developed traditional food security mechanisms such as crop cultivation, livestock keeping, pre-historic furrow irrigation systems, hunting, gathering, trading activities, food preservations, environmental and soil conservations based on their knowledge on the fragile ecology. This study also observed that these traditional food security mechanisms have declined over time. The study recommends that the Marakwet traditional food security mechanisms and mechanisms introduced in the area by the government should be integrated for sustainable food production and food security.

Key words: Marakwet, food security, traditional mechanisms

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I. INTRODUCTION

Globally, discussion about food security and responses to it can be traced back to World Food Conference on Food and Agriculture (FAO), the establishment of FAO in 1945 and the Universal Declaration of Human Rights in 1948, which made access to adequate food a fundamental human right (FAO, 2002).The conference asserted that freedom from hunger is the most fundamental human right that can be achieved if people are food secure. Despite this reality most of the world's population still suffers from food insecurity (FAO, 2010). The 2004 FAO report points out that agriculture is key to food security in many parts of the world. The report indicated that agriculture contributes to poverty reduction by improving farm productivity, limiting food related conflicts and food security. The report also points out that empowering people to grow their own food for household consumption may solve the problem of food insecurity.

The 2008 FAO report further asserts that agriculture is considered as one of the sectors that can play a significant role towards achieving food security in a country. This report indicated that majority of people living in semi-arid areas were in need of food. The report notes that majority of people living in arid and semi arid areas had access to land but lacked necessary agricultural skills for farm productivity.

In Africa, interest in issues related to food insecurity and food security mechanisms in the continent has increased in the past years (Kisaka, 2009). Concerns about the effects of food insecurity on the prospects for achieving economic development to end poverty and hunger are also on the rise (Kisaka, 2009).Africa has been classified as one of the most exposed continent in the world regarding the effects of drought and famine (Shauri, 2011), and this affects more people than any other disaster in Africa, its impacts is as a result of a convergence of factors such as poverty, over dependency on rain-fed agriculture, population pressure and inadequate economic development in the semi-arid areas. Semi-arid areas are more vulnerable to drought and famine because their economies are tied to the rain-fed agricultural production, which has lower productivity (Graaf, 2011).

Semi-Arid lands receive annual rainfall of less than 500mm per year (FAO, 2002). About 80% of the people in the world live in such areas, where water is a constraint on everything they undertake (Winpenny, 1991). Over 70% of the land in Africa is arid and semi arid. Thus, the rapidly growing population and increase

in the on-going economic development in the continent are putting a lot of pressure on these lands (Bernard et.al, 1989).

According to FAO, 2010, developing countries account for 95% of the world's vulnerable areas to drought and famine effects, and a third of these areas are in the sub-Sahara Africa. Graaf (2011) asserts that, although some of these developing countries report to have sufficient food at national level, this does not imply food security at rural areas which is the arid and semi arid areas. Averagely, about 80% of Africans live in these areas and many face periodical food shortages (Brummet, 2011).

In Kenya, semi-arid lands, make approximately 80% of the country, and they are home to 20% of her population, The primary challenge in these regions is how to ensure food security in a sustainable manner and in such environments that are prone to drought and where climate change increases unpredictability (GOK,2008). This area represents potentially important resources which, if managed carefully, can help meet Kenya's food self-sufficiency goals, environmental protection and conservation will be essential to maintain food security and viable economy in these lands.

Kenya's food self-sufficiency nationally has grown worse with occasional prolonged drought and famine in the recent times (Downing, 1989). Drought is a characteristic element of the environment of Kenya and has affected agriculture, and the economy at large. This phenomenon poses the challenge to rethink and focus on the issue of food security in the country and in particular semi-arid areas of the country (Kisaka, 2009).

According to Intergovernmental Panel on Climate Change (IPCC, 2007); Semi-arid communities need some food security mechanisms because their crops are falling and their herd sizes are being reduced to less than minimum required for subsistence.

Food security has remained a national and community problem which should be solved (GOK, 2008). Marakwet District is a semi arid area in ElgeyoMarakwet County, Kenya. Food insecurity has been one of the major challenges in the area. The area has persistently faced the challenge of chronic food insecurity (Marakwet District Development Report 2002-2008). The rationale to undertake this study was based on the challenge of chronic food insecurity in Marakwet District.

II. METHODOLOGY

Descriptive research design was used to gather information. Most of the data collected was qualitative in nature which suited this design. Purposive and snow balling sampling technique was used to select the informants. Purposive sampling was used because the study required men and women with adequate knowledge of the history of the Marakwet community and the history of food security mechanisms in the study area. Therefore not everybody in the area of study qualified to be in the sample.

The study also used snow balling sampling technique because the local leadership and some of the informants directed the researcher to other knowledgeable men and women in the study area with key information on the Marakwet food security mechanisms.Oral interviews and focused group interviews were used in collecting data in this research. The respondents were clan representatives, men and women, farmers and government agricultural officers. Data collected was recorded through note taking, analyzed and put in a narrative form to describe the food security mechanism used in Marakwet District.

The respondents interviewed were the Marakwet living in the highlands and those from the Kerio valley. A few Keiyos/Kiptani and Tugen bordering the Marakwet were involved also as respondents. The study also interviewed agricultural officers working in Kerio Valley Development Authority (KVDA). Other informants included non-governmental staff working in the study area who were perceived to hold vital information on food security related issues and the Marakwet people.

Personal observation was used in obtaining information on day-to-day activities of the people living in Marakwet highlands and in the Kerio valley. This method aided in getting more information about the Marakwet community, especially on their daily Socio-economic activities on food production and food security mechanisms.Secondary data from documentary sources helped to give the necessary information and background of the problem of food insecurity to orientate the study.

III. RESULTS AND DISCUSSIONS

3.1Traditional Food Security Mechanisms in Marakwet

The Marakwet community used the traditional food security mechanisms to cope with their harsh environment. The Marakwet community engaged in agricultural activities to earn a livelihood (Critchley, 1983). These include livestock rearing and growing food crops. During the pre-colonial era, resource management in the Marakwet region depended very much on whether a group was agrarian or pastoral (Kipkorir, 1983).

From the study, the agrarian Marakwet community had a majority living in the Marakwet highlands (*mosop*) who depended very much on tilling the land for crop production. The pastoralists and semi-agriculturist on the other hand lived in the escarpments (*lagam*) and Kerio Valley (*keu*) and they believed that all livestock was given to them by God (*asis*). Most groups lived almost wholly on milk, blood and flesh, supplemented with

what they obtained through barter trade with the agrarian societies among the Marakwets and along the border areas. The pastoralists also had better-organized warriors to extend and protect their territories (Kipkorir, 2008). Both the agrarian and pastoral societies left large tracts of land for food security purposes, whose disruption constituted a major environmental problem in the area. The following traditional food security mechanisms were used in Marakwet, based on the responses from the oral interviews and key informants in the study area.

3.2 Cultivation of the millet and sorghum as Food Security Mechanisms

The people of the Marakwet community are reputed cultivators (Critchley, 1983). Cropping was achieved by an assemblage of techniques that included frequent tilling of land using traditional hoes (*makombe*) and sticks, crop mixing, season rotational grazing of livestock, soil control and heavy application of manure obtained from livestock droppings as well as plant residues (Kipkorir et.al, 2008). Finger millet and sorghum were the principal crops grown; the production of finger millet was especially central to the Marakwet economic and social relations. Finger millet constituted a significant part of food of the household to which milk, meat and vegetables were added (Moore, 1986).

One of the key informants, a senior clan elder from Kapcheptugen clan said;

“Our community cultivated majorly two crops namely sorghum and millet than any other crop in the pre-colonial Marakwet, for two reasons, the crops are drought resistant and can resist environmental stress, the crops also cannot easily be attacked by crop pest and diseases. Mostly we cultivated millet compared to sorghum because it could stay for long even for 5 to 10 years and could not be attacked by pests such as weevils due to its smallness in size. Sorghum was attacked easily by pests and was harvested, dried and stored in the cell (*tobot*) constructed slightly above the fire place or proportionally direct to the fire place for smoke to go through it while at the *tobot*, the smoke discourages the pests such as weevils from attacking the sorghum by suffocating them, this was done to save food for future from destruction by pests (12th April, 2018)”.

It can therefore be argued then that this method was effective in pest and disease control to ensure continued availability of food among the pre-colonial Marakwet community even in the period of prolonged drought.

From the study, The methods of growing crops in Marakwet District were variants of shifting cultivation commonly applied to agricultural systems based on cultivating land only for a few years, then returning it to natural vegetation several years to restore soil fertility. Through these systems and crop rotation, land fertility was maintained (Isaacman, 1990). This was possible because land was relatively plentiful. It was also aided by the grazing of cattle on the fallow land (Kipkorir, 2008).

Intercropping as a manner of crop production suited the needs of the locals and their fragile environment in many ways (Critchley, 1982). First, if deep soil was left bare, it would be washed away by the heavy torrents of the region. Constant covering of the ground by some crops therefore preserved the soil by preventing soil erosion. These crops served as food for both human beings and animals. Secondly, soil fertility was maintained through multiple cropping. The available soil moisture and plant nutrients were fully used because different plants had different and complementary requirements and were rooted at depths. Thirdly, the spread of pests and diseases was arrested since the neighboring plants were less likely to be of the same species. These practices were besides other Marakwet economic activities aimed at ensuring food security and self-reliance.

Harvesting was done in the months of November and December (Kipkorir, 1993). From the study, Tools used to harvest sorghum and millet included knives made from iron for harvesting crops, wood sticks, and the animal skin basket used to transport harvested food from the field. The animal skin bags were used to store sorghum and finger millet. Storage structures employed provided many features that were conducive to good preservation and were inexpensive, as they were made of local natural materials. The design and capacity of these facilities were determined by the type of foodstuff and the size of the crop (Lonsdale & Bruce, 1979).

In Marakwet District, Majority of the Marakwet families stored their crop harvests in traditional stores for food and seed purposes.

A senior clan elder informant, notes that:

“Finger millet and maize are usually stored in the traditional granaries while sorghum is stored in the loft “*tobot*”. Bananas and paw paws are also stored in the traditional granary with finger millet for two to three days to ripen them for either household consumption or for sale. Cassava and sweet potatoes are harvested and consumed or sold immediately because they are perishable (19th June, 2018)”

A female informant, aged 70 who is also farmer reported:

“She makes sure that enough food is stored for her family till the next harvest season, she also saves seeds, which she hangs on the roof of her granary after a careful selection from the healthier and strongest plants (19th June, 2018)”

This study observes that the storage of harvested food crops and conservation of selected seed enhances the genetic potential of crops, saving good and health varieties of sorghum, millet and maize favorable to harsh climatic conditions as well as being self-reliant for planting was geared towards food production and food security among the Marakwet people.

Crop production was not without problems. Pests, diseases and drought sometime combined to cause famine. Also, pests such as ants, weevils, locust, and rats were common in grain crops.

An informant, a clan elder and a pre-colonial farmer reported that:

“Weevils were a major problem in maize, cowpeas and sorghum stores. Finger millet was free from weevil attack because of its small size. Rats and ants in our area also destroy almost every crop produce especially on the traditional grass thatched granaries. Monkeys also invaded the stores and eat whatever they came across (2nd June, 2018).”

In case of rain shortage, drought and famine, rainmakers (*orkoi*) from the Toyoi clan were often approached with animal offering or sacrifice in the *kapkoros* (sacred site for offering sacrifice and appeasing Marakwet gods) and expected to intercede on behalf of the victims (Kipkorir, 1993). Likewise, rainmakers (*orkoi*) performed specific rites that marked major phases of the annual cultivation cycle (Kipkorir, 2008). All these pre-colonial mechanisms were made to ensure that the Marakwet community remains food secure.

A clan elder informant from the rain makers clan, *Toyoi* clan, submitted;

“...Among the Marakwet clans, it is only Toyoi (Rain) clan that has the prowess in rain making, it is only the priests from the Kaptoyoi clan who were only allowed to say prayers and perform rituals to god of rain (*ilat*) and harnessed the power of *ilat* to rain for the good of the society during prolonged drought. Kapcheptugen in Arror came to stand out as the most important center of Toyoi influence in Marakwet, the Marakwets believed *ilat* was not just seen as a natural hazard, but viewed as the super agent of *asis* (god), the god of rain (2nd June, 2018)

This study therefore argued that with the help of the rainmakers, from the Kaptoyoi clan, the Marakwet were no longer held hostage by the vagaries of nature, they harnessed the environment with the help of rainmakers for their benefit ensuring the area is food secure.

3.3 Traditional Storage facilities as food Security mechanism

African art is not based on single tradition; it is influenced by the traditions of many diverse cultures, all which have their own way of doing things depending on the social, economic and geographical location (Kipkorir, 1993). Similarly, homesteads across Africa consist of different structures that serve divergent purposes such as sleeping, protecting animals at night and storing food. Africa people build homesteads in different shapes depending on their experience and culture (Akong'a et al., 1998). Among the Marakwets, it is at marriage that men constructed granaries for storage of harvested crops (Kipkorir, 2008). In the study area, *Keu*, Marakwet District, one of the traditional structures still in use is the traditional granary. No one knows its history, but members of the community through oral tradition give credit to their forefathers for its conception. From the study, in the Kerio valley of the study area, the community still stake claim to one of the oldest granaries still in use. It is called “the traditional granary” known as *kapchoge* in the Marakwet language. The granary (*Kapchoge*) is used to store food harvests and for seed saving. The conventional Marakwet traditional *kapchoge* were raised 1 metre above the ground, round shaped constructed using locally available materials, stones, and it is wall shaped structure about 8ft high (Kipkorir, 2008). The roof is conical in shape; it is built using locally available materials such as long grass, poles, rafts, mud, cow dug and ash. It is thatched of grass for proper aeration and cooling of temperatures. The make according to the respondents was also crucial in keeping away pests as the inside environment could rarely support any life. The stores were raised to make it hard for rodents to infiltrate the stored food. Stored food in these stores could last for 5-10 years something that ensured the Marakwet people are food secure.

A clan elder from the kapchetugen clan submitted;

“...Marakwet Men constructed the traditional stores, the stores were round-shaped and constructed by use of wattle, stones and smeared with mixture of mud/ash and cow dug from inside up to the roof tops, this mixture repel pests such weevils by suffocating them, the Marakwet granaries are also thatched with special tall grass-making it have cold temperatures with limited oxygen hence not favoring pests like weevils to survive. The stores are also constructed in a manner that is very hard for rodents to enter-the stores, the stores are elevated on stone stills to reduce rodent infestation, this ensured there was no crop loss through attack by pest and diseases (14th April, 2018).”

In the same tone, another clan elder emphasized:

“...the construction of the Marakwet traditional granaries requires a well experienced, skilled craftsman who does not require a tool box, but needs to be guided by wisdom and experience, the construction of granary relies on both genders, men role is to assemble the building materials such as poles, rafters and rope from preferred indigenous species such as acacia or wattle tree and spearhead construction, once he lays the foundation and completes construction, he finishes his task by thatching the roof with special tall grass, and a woman collects grass for thatching and prepares the inside of the granary by collecting mud and mixing it with cow dung and ash, which she smears this mixture on the inside wall and floor to smooth the surface of the granary. The mixed mud, cow dung and ash are repellent to insects and pests (14th. April, 2018).”

An informant, a leading mixed farmer of Kapterik clan submitted:

“Since she was young, traditional *kapchoge* have been the primary means of food storage and have the capacity to keep food for more than 5 or 10 years, the granary is revered by Marakwet community and considered an important structure for every homestead, the granary is also a representation of farmer’s strength and wealth, as it indicates that a farmer is hardworking and can provide food and security for the family (12th June, 2018).”

In the same tone, Mzee Sigilai, Kapcheptugen clan elder, duly affirmed that:

“An empty granary signifies laziness, the granary is also advantageous to any man who wants to marry, as full granary demonstrates his hard work and intent to provide for the family (2nd June, 2018).”

According to the community clan elders, the traditional *kapchogen* were so highly valued and built to last. The roofing and poles used are from dense specifically selected trees which cannot be destroyed by termites and other pests. The grasses used to thatch the roof are perishable, one needed to add another layer when new produce is harvested and re-smear the floor and walls. Harvested crops especially sorghum was stored in new stores to avoid new harvest from mixing with the old harvest from previous seasons to avoid spread of diseases, sorghum was easily attacked with pest and diseases compared to millet.

One of the eldest clan elder aptly submitted:

“In our community tradition, it was and still a taboo to burn or destroy a granary, stealing from peoples granary was also forbidden and punishable with dire consequences, we also fence our homestead housing the kraal, granary and houses to serve as protection for both the granary and our livestock, the inclusion of the livestock was for security remedy and signal, one of the goats is fitted with a bell around her neck and if there is any commotion, you will be alerted (3rd June, 2018).”

This study, therefore, submits that the Marakwet traditional granaries helped the small scale farmers and the community at large to survive in a harsh environment and climate that is not always conducive for food production, with rainfall below 900mm annually. The area is prone to severe drought and farmers may face many challenges if he or she does not plan well.

This study observes that without proper adequate storage facilities and seeds, food insecurity is inevitable, thus it is crucial for each homestead to store abundant food in order to prepare for future unpredictable conditions. The traditional granaries can be used as a tool to fight hunger and allows farmers to save seeds especially in unpredictable climate conditions in Marakwet District, awareness of the traditional granaries in the study area and its importance should be emphasized because it is effective, simple, and cheap and a way of saving food for the family. Traditional granaries are therefore a solution to fighting food insecurity in a homestead and the community at large.

From the study, the skillful construction of traditional granaries by smearing, thatching and storage of both crop harvests and seeds, shows the Marakwet community controlled pest and diseases and ensured conservation of seeds for next planting season which helped to store food for future. It can be argued that this pre-colonial culture was a mechanism that ensured the community remained food secure at all times.

3.4 Pre-historic furrow irrigation systems as food security mechanisms

Irrigation, which is a process other than natural precipitation, which supplies water to cultivate plants (Stern, 1979) has been found to be essential mechanism for developing areas of marginal productivity such as arid and semi-arid lands in Kenya. Lowe (1986) submits that the indigenous technology based on the irrigated farming such as Marakwet indigenous irrigation systems use cheap simple technology of irrigation. The irrigators tend to identify themselves with the system for food production and on a subsistence basis. The establishment of furrow irrigated farming in the Kerio Valley part of Chebiemit and Tot Divisions of Marakwet District dates back to many years (Ruttoh, 1988). The Marakwet District, Kerio Valley, has nine furrows (Ruttoh, 1988), that include Muyen, Kapcheptuge, Kapterik, Chemengir, Lukik, Kipkat (KVDA), Kabonon-Kapkamak, Karellach and Kapchebor furrow. Through oral interviews, Chemengir and Muyen are the first and second to be constructed in the area (Kipkorir, 1993), and owned by Kapsogom clan. The third and fifth furrow

is the Kabonon-Kapkamak furrow and owned by Toyoi clan. It owes its origin to Perat, an industrious and skillful man (Kipkorir, 1993). The sixth furrow is Kapchebar, owned by Kapketomo clan, Kapchebar furrow was washed away by floods. Other furrows are smaller furrows.

The establishment of irrigations system in the Kerio Valley Marakwet District dates back to many years ago. Kipkorir (1983) asserts that the Marakwets do not claim to have dug the first channel but they themselves are certainly responsible for the technology and construction of the present system. Henning (1951) notes that the indigenous furrow technology based on irrigated farming emerged even before the arrival of the forefathers of the present Marakwet users of the furrows. The Marakwet community employed indigenous irrigation using waters from permanent rivers such as river Arror, Embobot, Enou, chesegon and Embolot to grow food during lengthy drought spells (Ruttoh, 1988). The distribution of the irrigation waters to various farms was controlled by the water clan elders (*Kimwar*). Due to their interest in crop cultivation, they created extensive pre-colonial hill-furrow irrigation schemes (Ruttoh, 1988). The traditional furrows greatly supported crop cultivation by ensuring constant supply of water to every village under the management of *kimwar* (Isaacman, 1990). As such, many farms could grow crops during the dry season that added to the food stores. Canals and other water channels ensured the farms in Marakwet do not suffer from the dry seasons. Through these traditional water channels, the Marakwet community ensured that it remained food secure.

According to Kipkorir (1983), The Marakwets living in Kerio Valley could not have survived in the harsh environment were it not for the indigenous irrigation. Ssenyonga (1986) asserts that irrigation in Kerio Valley emphasized on maximization of water for crop cultivation i.e. finger millet, cassava, banana and sorghum.

The clan elders, informants had this on the indigenous furrow irrigation;

“....Our pre-historic furrow irrigation system plays a major role to food security apart from rain water; the traditional furrows are purely under strict management of clan elders of the Marakwet community to bring order in distribution of water into the various clan farms and to maintain the channels. Water is channelled via canals for long distances or kilometres away to the agricultural farms. Farmers per clan had schedules for them to get the water for irrigation. A system of water rotation was worked out whereby farmers use water in turns, day time (*tisho*) afternoon to midnight and midnight (*toboi*) to 11am, those receiving the water at night take it during the day next time round, and water was allowed into the various Marakwet clans farms in rotation. This was done during dry spells for fair distribution of water to various Marakwet clans of *keu*. The clan water elders (*kimwar*) appointed two men from each clan who are responsible for opening the furrows out lets and directing the irrigation water into the farms, and closing them when the crops have received sufficient water. During wet seasons the water was redirected to the main stream or streams. With the use of these traditional furrows to irrigate food crop farms, the community was food secure. The commonly method of irrigation used in this area during the pre-colonial was flooding irrigation-directing water from the canals to the farms and our community was stable in food with plenty of millet and sorghum (FGD Arror 23rd, April 2018)”.

In the similar tone, Michael (1978) notes:

The key factor which influence irrigation efficiency include the design of the irrigation systems, management of the irrigation systems, the degree of land preparations and skill and care of the irrigators.

A senior clan elder in the focus group discussion submitted:

“As per our Marakwet customary laws, women are not allowed from diverting the furrow irrigation water to the crop fields, it is a taboo, this responsibility belongs traditionally to the clansmen, who have the authority of their water. Women under menstruations are culturally forbidden from contact with the furrow water for they are unclean, and it may lead to the leakage of the furrows, breakage of the irrigation structures and even drying up of the furrow streams (FGD, April, 2018).”

Adams et.a.,l (1997) aptly submitted:

“...those families or clans with no right to any furrow obtained the water through forming alliances with clans which own furrows or through purchase, which they obtained only during the free period(*lugon*) when clans are “taking over”(11am-2pm) water from other clans. He also noted that women who have no adult men to take part in the regular repairs and maintenance of furrows are forced to pay for the services of males during the maintenance periods to make use of water for crop cultivation, as contravention to the taboo of women taking part in any activity related to the furrows is believed to cause miscarriages and infertility.”

From the field study, the pre-colonial Marakwet community living in Kerio Valley *keu*, Marakwet, everyman ensured that his family or families remained food secure. This informed the fact that traditionally land was owned by Marakwet men. As such, they were responsible for land cultivation and women only acquired such a right through marriage (Kipkorir, 2008). Men that had no land acquired it through exchange with livestock, hides, and skins with those that had land. As such, the amount of food increased as the capacity to produce increases with the number of people cultivating land. The food was stored in different granaries.

Critley (1982) aptly captures this cultural practice among the Marakwets, he notes:

In the homesteads crop harvests were stored in two traditional granaries, one for man and the other for wife or wives. The husband had a different store from the wife or wives, which could only be opened during famine. Each wife had her store for consumption until exhausted then the one for the husband can be opened. It was only opened during food crisis, when woman store has been exhausted, and sometimes the head of household has special visitors, the man would prepare traditional liquor using what is in his store. The separation of the husband's household's harvests from the wife was a traditional food security measure. The husband's food store acted as a strategic food reserve for a fall back in case of drought and famine. The woman controlled the grains in her store for family consumption.

On this, one of the eldest informants and a former chief, Mzee John cherwon of the kapcheptugen clan, argued bitterly:

“ I am a disappointed clan elder, the present population of Marakwet do not practice the traditional storage of crop harvests with man and wife/wives having separate stores, this is may be main reason why in the recent times we are periodically affected with food shortage/famine (3rd June, 2018).”

From this study, the community pre-historic furrows played an essential role on food production in a harsh Kerio valley environment. The construction, maintenance of the furrows, orderly distribution of the furrow waters and the culture attached to it, shows the significance of the pre-historic furrow systems to the society livelihood in food production and food security. The construction and storage of food produce separately by the community informs the ability of the Marakwet community to cushion themselves against food shortage thus food security mechanism.

3.5 Non-agricultural Activities as Food Security Mechanisms

Although cultivation of millet and sorghum and livestock keeping are the main source of food to the Marakwet people, hunting and gathering as forms of food acquisition in the area were also associated. The clan elders argue that, Marakwet community practiced hunting besides crop cultivation especially during the dry periods. It was perceived that game animals multiplied more during the rainy season and were left to mate. It was also believed that there was an abundance of food during the rainy season hence the unnecessary of hunting.

During the dry season, even owners of large herds of goat, cattle, and sheep went to the forest to hunt so that they could save their domestic animals and the animal products. The hunted animals such as antelopes had to be exhausted before the owner of the kill goes back to hunt. Hunted animals could be exchanged for other valuables such as land (Carruthers, 2006). With land, the potential for crop production increases thus increasing the capacity for food security. Hunting in *keu* area has since reduced in the area with the increased population.

Besides hunting, respondents, clan elders pointed out that the Marakwet people practiced gathering during the dry season. Both men and women according to the respondents gathered wild honey, vegetables, wild fruits, and roots from the Marakwet communal forest. Among the wild fruits collected that provided food were the *muchukwo* (*Barchemia discolor*) and *mokoivo* (*Sycamore*). *Aria* (*Tamarundus discolor*) was used as a source of food as well as medicine believed to cure stomach ailments. *Tuyunwo* (*Balanites Aegyptiaca*) was also a common plant from the forest that could be used as vegetable and stored as well to serve as animal feed for later. Edible plant roots, leaves and fruits have always been gathered and used as food all over the semi arid areas (Kisaka, 2009), this is done during the dry seasons and they serve as additional source of diets at certain times of the year as source of substance and vary from one area to the other.

An informant, who well known for his hunting skills during the pre-colonial asserts that:

“Hunting was done in a groups and as a community we used different hunting methods such as using dogs, setting of traps on animal paths, throwing sharp sticks or arrows for game meat, we also use poisonous arrows only to kill wild animals that are not for food e.g. baboons. Traditionally the reason for hunting was carried out to provide meat food for the family and to supplement the family food, it was also to ensure that family herds were left to multiply, thus an adaptive strategy for future security for the Marakwet people (11th April, 2018)”

In the Kerio Valley area of the study, ant hills do usually yield high quantity of termites (*Termes Ballicosus*) which the Marakwet population living in *keu* has gathered over years in the month of April every year, fried and eaten or dried for future use.

An informant clan elder said:

“In our community ant hills are very important and belong to people individually or as a family or as a clan, not one gathers termites from ones ant hill without permission, we harvest *kon'ga* (termites) during the month of April each year, harvesting is done at night when there is darkness, a small sizeable hole is dug near the ant hill and fire is lit, the fire attracts the termites which then fall on the dug hall, after enough collection you

transfer them into a collecting bag made of animal skin, the gathered termites are the fried in the homesteads and eaten, surplus are dried and stored for future use (16th April, 2018).”

Termites appear in times of food scarcity (Kisaka, 2009), thus, it is important to note that, termites serves as an important supply of additional food. From the respondent’s submissions ant hill are an integral part of the Marakwet society by the fact that an ant hill are owned individually or as a family or as a clan and guarded jealously.

Hunting and gathering, harvesting of termites, therefore, has been an important source of food during the dry season of year when food from the livestock and farms is low in Marakwet. It can therefore be argued that hunting and gathering play a significant role in food provision as a mechanism in the pre-colonial Marakwet, hence, food security.

3.6 Commerce as Food Security Mechanism among the Marakwets

The Marakwet people in the lowland such as Kerio Valley (*keu*) traded in food items with their counterparts in highlands (*Mosop*). They also shared trade ties with their neighbors mainly the Pokots, Tugens, and Keiyos (*Kiptaani*). The main traded items include maize grains, termites, cooking pots, milk, meat, and millet between the Marakwets living in the highlands and those living in the lowlands. Items obtained from their neighbors the Pokots and Tugens were mainly milk and meat in exchange for millet, cassava, bananas, and sorghum. The Marakwet exchanged millet, cassavas, and bananas for honey with the Keiyos. As such, barter trade became a food security mechanism employed by the Marakwet especially when it came to the foods that they did not have.

An informant, a farmer, pointed out that:

“.....the trading activity in the pre-colonial period was done between Marakwets and their neighboring communities the Pokots, Tugen and Keiyos (Kiptaani) and also between the Marakwet people living in Mosop and those living in the Kerio Valley. Items of trade from Mosop were majorly maize grains and from *keu* were cooking pots, termites, milk, meat, and also millet. Items of trade obtained from Tugen and pokots were mainly milk and meat in exchange with millet, cassava, bananas and sorghum from Marakwet. From Kiptaani, Marakwet people obtained honey in exchange with millet, cassava and bananas. Hence, trading activities enabled Marakwet people to obtain what they didn’t have and this increased one chance to secure food or reap if in case your community fails in terms of food production (17th, May 2018)”.

This pre-colonial Marakwet barter trading activity between the Marakwets of the *keu*, escarpment and the highlands, and their neighbours the Tugen and Kiptani ensured food security for one obtained what the household lacked, thus a mechanism to food security.

3.7 Environmental and Soil Conservation Measures as Food Security Mechanism

From the field study, Trees were believed to be sources of water, unlike today where trees are felled at will, it was a taboo to cut down trees such as palms (*Sosia*) and sycamore (*Mokoiwo*). Firewood could be obtained from fallen branches and trees as opposed to cutting them down for such a purpose.

According to a respondent who is a clan elder and a retired area chief:

“Cutting down of trees especially along the river banks and streams was not a tolerated practice. Any person found guilty of such a crime would be liable to a hefty fine of a male goat and 2 kilograms of honey. Moreover, such a person would be prohibited from using hill-furrow waters for irrigation in their farms for a specified period of time. This was done to ensure continuity in food production through the use of furrow waters because with cutting of trees along the rivers it will bring a disaster or dry up of streams (food insecurity) to the community (7thmay, 2018).”

Acacia totolis (*sesyah*) and *Balanitesagyptiaca* (*tuyunwo*) were fruit bearing trees that could not be cut down at any given point. Owners of such trees in their farms could only prune them. Their fruits known as *sakaram* formed delicious animal feeds that were collected during the harvest season, the early dry season, during the months of November and December, and stored to feed the animals during the dry spells (Kipkorir, 2008). The fruits could even be eaten by human beings. The preservation of these trees was a significant conservation measure to food security.

Marakwet farmers practiced shift cultivation (Moore, 1986). At the point when land declines in production, farmers could shift their production to virgin land and allow the old land to gradually regain its fertility. This practice according the informants was also crucial to curbing soil erosion. Moving to virgin land ensured that food production does not reduce in as much as the old land is losing its fertility.

During seasons with poor rains according to the interviewed respondents, the Marakwet people did their crop farming along escarpments and river valleys. To curb soil erosion, the locals used to build traditional ridges using small tree trunks, branches, and small stones that were arranged across a cultivated piece of land.

Others build terraces to conserve the soil and its fertility. All these practices were done by the community as a mechanism to ensure food production and food security.

3.8 Livestock keeping as Food Security Mechanisms

The people of Marakwet reared animals such as indigenous cattle, sheep, and goats (Kipkorir, 2008). These animals were a source of food despite serving other purposes such as payment of dowry and sacrifices to appease the traditional *ilat* god of rain and harvest. More than any other animal, goats were the most preferred due to their survival during the dry season (Karuti, 1979). They were easy to maintain as the browsing leaves and thorny plants was enough to keep them fat and healthy. During the dry seasons, the Marakwet took their livestock to the escarpments (*lagam*) and back to the lowlands (*keu*) during the rainy seasons to reduce overgrazing, a practice known as transhumance. The informants reported that, the transhumance was a food security mechanism as it ensured there was enough food to sustain their livestock through hardship periods by having rotational grazing between the Marakwet escarpments and the lowlands, Kerio Valley.

In the focus group discussions, a respected clan elder with large herds of livestock submitted:

“Marakwet people kept animals such as goats, sheep and cattle. These animals were source of food as well used for payment of dowry and offering of sacrifices to appease *asis chebetipmatiau* (Marakwet god) to bring rains and bumper harvest. We mostly keep goats than any other animal because it could survive even during drought and famine periods since they were browsers and can even eat dry leaves of plants and thorny plants. Marakwet people practiced transhumance, during the dry season the grazing of livestock was carried out in the Marakwet escarpment (*lagam*) while during the wet seasons in the lowlands (*keu*). This reduced overgrazing and ensured their sustainable animal grazing points, ensuring continued food security. It minimized stock loss .

Another food security mechanism as per the clan elders employed by the Marakwet was animal leasing (*keminto*). The Marakwet people leased their animals to relatives (*kaborin*) in highlands or to their Tugen friends (*Tilya*) during times of hardship. This practice was meant to avoid/reduce livestock loss during dry periods or in case of a disease outbreak. This practice also enabled cross breeding to get livestock with improved and more adaptable attributes. As a food security mechanism, this practice ensured perpetuity of animals for future use.

According to the informant, a clan elder:

“Marakwet men leased animals or gave some livestock to friends or relatives “*tilya* or *kaborin*” in different places such as in *mosop*, *tugen* or *kiptani*, Marakwet people living in Kerio valley leased their livestock/animals to their relatives(*kaborin*) in the Marakwet highlands, and also with their friends in *tugen* and *kiptani*. This was a traditional practice that was done to ensure food security among the Marakwet people. This helped avoid one losing all herds in case of an outbreak of disease or drought. During famine (*kiptabiis*) one can be able to obtain food from the leased animal or have an alternative source of food .

From this study, in a nutshell, the keeping of traditional livestock by the community especially goats which are hardy in harsh environment of Kerio Valley was to ensure availability of food in form of milk, meat and blood even in times of drought and crop failure, the cultural art of leasing animals to friends or relatives was one way of insurance for food security in case of livestock disease outbreak or loss. These mechanisms contributed to food production and food security in the pre-colonial Marakwet.

3.9 Food Preservation as Food Security Mechanism

Traditionally, from the field study the head of a household among the Marakwet community in the pre-colonial period could identify a fat male goat (*setim*) or sheep from his herd (*kraal*) for slaughter. The chosen animal would then be slaughtered and its bones carefully removed without tampering with the meat (slicing it into pieces). The animal is then wholesomely boiled in a cooking pot without adding water or any other ingredient, just the fat present in the animal body. When fully cooked, the meat would be smeared with honey and sealed in a pot as storage. The meat would later be consumed during famine or when there's a food shortage, hence, a food security mechanism used by the Marakwet community.

During heavy rains especially on April, according to the respondents, the Marakwets harvested termites. These insects would then be prepared by removing the feathers, frying, drying, and then mixing them with honey. To both the meat as earlier discussed and termites in this case, honey acted as a preservative (Kipkorir, 2008). They were then stored in some special small pots where they could go for days without getting spoilt. These insects were really helpful for hunters when they trekked for lengthy distances in search of wild animals for hunting.

Cattle, goat, and sheep meat according to the respondents could be sliced into stripped pieces and dried (*sirken*) by smoking and salting. This practice was undertaken during the food abundance spells and the meat preserved for the unforeseen dry periods. This pre-colonial Mechanism ensured the community remained food secure for long periods including times of prolonged drought.

One of eldest women, an informant reported that:

“Sustainable consumption of food during the pre-colonial period was encouraged, one had to eat one type of food at a time, it was a taboo amongst the people of Marakwet for one to consume milk and meat at the same time- this was indirect mechanisms to save food to be used in future. It was a taboo also to consume honey and “ukoko” at the same time. According to our culture, when one does so, the bees will attack honey harvesters, causing a lot of injuries and even death during the next honey harvests. This was culture that was passed from one generation to another; it was a food security mechanism to minimize food waste hence food security (5th April, 2018)”.

This study observes that the Marakwet pre-colonial food preservation methods was and still remain essential for food security in the study area and should be encouraged to be practiced by the households of the semi-arid areas.

3.10 Gender factor and its effect on food security.

In Africa, women play a major role in the agricultural sector through sowing, weeding, and application of manure, harvesting and transportation of farm produce (Moore, 1986). Men are only responsible for land preparations through the clearing of the agricultural fields (Kipkorir and Kareithi, 2012). The women therefore end up overburdened since they are also involved in tending small livestock, gathering firewood and vegetables, fetching water and taking care of their children (Moore, 1986). This limits them to involve themselves in other socio-economic activities for food production and food security. Among the Marakwet people, according to Kipkorir (2008) women acquired rights to cultivation areas through marriage; men provided cultivation land to support the family or families while women provided labour. Marakwet society is patriarchal and men own economic resource for production such as land which they distributed to their sons upon marriage through inheritance.

In the study area, informants reported that, Farm produce is managed jointly; crop harvest was stored in two traditional granaries, one for man (*kapchoge muren*) and another for a woman or women (*kapchoge korka*). Kipkorir (2008) asserts that despite many of the farm activities performed by women, they make limited decisions without consulting their husbands. This situation was witnessed during the oral interviews whereby some women did not want to appear as managers of farm activities in the absence of the husbands.

Generally, the results of the study in the study area show that most of the agricultural activities in the Marakwet District in the pre-colonial period were performed by women. In most cases, in the study area land is owned by men, this tradition locks women out on land control and ownership. This implies that women have little say in the management of the farm despite them dominating most of the farm activities. This act is a hindrance to food production and land development because women are not free to invest in land development without the consent of the husband.

In the study area, women did not participate in decision-making; women were not allowed to sell livestock or farm produce or exchange with other commodities without the authority or consent of the husband. They were only allowed to sell or exchange cheaper commodities such as goat milk. Even in the post-colonial Marakwet community, property ownership such as land, agricultural activities and livestock is still biased in favour of men; even the widowed should consult their in-laws, if they wanted to transact any economic activity involving development.

IV. CONCLUSIONS

The pre-colonial Marakwet people had employed various food security mechanisms that have contributed to food security. Irrigation cultivation, livestock keeping, hunting and gathering, trading activities, gender roles, soil conservations and food preservations methods were important socio-economic activities of the Marakwet people. Nearly all the Marakwet clans or families raised goats, sheep and cattle that provided food in form of blood and milk, the milk complemented the grains from cultivation, and in situations of poor harvests, animals were slaughtered to carry families through the period of scarcity, hence livestock keeping served as a food security mechanisms and that complemented agricultural production, substituting food crops in times of need.

The traditional grazing patterns of livestock between escarpment (*lagam*) and Kerio Valley(*keu*) helped to seasonally manage the movement of livestock thus reducing spread of animal diseases and utilizing the different ecological zones of the Marakwet land. It has also prevented over grazing and soil erosion of the already delicate environment. This was done the Marakwet community with the mastery of their ecology, thus a mechanisms for food security.

The leasing of goats, sheep, cattle to either relatives or friends in Tugen and kiptaani was the most important method of ensuring food security. Based on the research findings *keminto* has always acted as a method of insuring against loss of animals in the event of diseases or cattle rustling, thus, this has always been

an important mechanisms food production system among the Marakwet and ensured food availability even in times of crop failure.

Apart from livestock keeping and crop cultivation, the Marakwet source of food also dependent on wild resources through hunting and gathering, exchange through barter trade, soil conservations and traditional food preservations. All these pre-colonial activities are strived to attain a degree of food security based on the people's perception and knowledge on their fragile ecology and have contributed to food production and food security.

The pre-historic irrigation furrows of Marakwet have played a significant role in food production and food security. This craftsmanship among the people of Marakwet lies in the exploitation of the available local resource in a fragile ecology which was done based on perception and mastery of their ecology and this irrigation systems has food security mechanisms have survived the test of time and have contributed to food production and food security.

The performances of the traditional crops such as millet and sorghum that are suitable for Marakwet, Kerio Valley are promising food security crops. The promotion of traditional food crops maybe one of the alternatives that can bring about increased food production through improved production method and expansion of cultivation land in the semi-arid Marakwet. When the production of the traditional crops is increased, chances are high that it may result to increase in food production and food security.

Based on primary and secondary sources, Marakwet community in the pre-colonial period had developed their own internal mechanisms to address the issue of food security. These mechanisms included the indigenous furrow irrigation, hunting, gathering, trading among other socio-economic activities that contributed to food security in Marakwet District. These mechanisms adopted by the community complement each other since there is no single solution to the food problem. The traditional mechanisms have been able to withstand the test of time.

Based on the research findings livestock keeping and cultivation of millet and sorghum is still key economic activity to food security in the study area, this indicates that the people of Marakwet had over time developed numerous food security mechanisms by 1850 that have contributed to greater food security.

It can also be pointed out from the study that, the traditional granaries can be used as a tool to fight hunger and allows farmers to save seeds. This is helpful because of unpredictable climate conditions in the study area. Awareness of the traditional granaries in the study area and its importance should not be underestimated because it is effective, simple, and cheap and a way of saving food for the family, and the long term services offered by granaries storage. Traditional granaries are a solution to fighting food insecurity in a homestead and the community at large. All this pre-colonial Marakwet food security mechanisms were adopted by the Marakwets based on their knowledge of their fragile ecology.

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