Available online at https://asric.africa/natural-sciences
ASRIC Journal on Natural Sciences Vol 3(1) (2023) 47-49

Fencing Lands to Enhanced Climate Change Resilience, promoting Biodiversity Regeneration and Improved Livelihoods of Climate Change in Makueni County

Frank Wesonga[1*], Francis Keya[2]

[1]Project Manager, African Alliance for Health, Research and Economic Development (AAHRED) P.O. Box 11102 Nairobi Kenya
[2]National Non-Government Council (NGO) Kenya, P.O Box425, Kenya

* Corresponding author: Frankwesonga2016@gmail.com

Abstract
Kenya is a food insecure country, weather patterns are drastically changing and people are losing livelihoods and earnings when their lands dry, water for domestic supply lacks and livestock die further frustrating livelihoods of the poor. This paper briefly discusses Fencing of lands as prerequisite to biodiversity protection and faster water retention mechanism, through tree planting, enhancing CO2 sequestration as trees, shrubs and vegetation's find suitable environment to grow. Baringo and Makueni County are characterized by unsustainable agriculture, environmental degradation resulting from soil erosion, high poverty levels and food insecurity due to unpredictable dry spells and climate change. The present paper illustrates that Fencing of lands improves agricultural land management practices, biodiversity growth increased soil carbon sequestration.
Keywords, food security, soil carbon sequestration, climate change, soil erosion

Introduction,
The capacity to protect land from interference and planting trees play a crucial role in ameliorating climate change by CO2 sequestration, where CO2 from the atmosphere is stored as carbon in stems and roots, thereby reducing the greenhouse effect. Trees also influence hydrology by absorbing, intercepting and storing precipitation, and releasing water to the atmosphere through transpiration, maintaining ground water levels and reducing runoff. Trees are a source of food, shelter, and habitat for many organisms and soil erosion has contributed to desertification, growing water scarcity, and climate events such as flooding, storms and final loss of biodiversity. Fencing helps regeneration increasing soil biodiversity and organic matter, leading to more resilient soils that can better withstand climate change impacts like flooding and drought. It stops loss of the humus leading to healthy soils resulting to strong plant growth and nutrient-rich crops, diminishes erosion and runoff, leading to improved water quality on and off the farm and water sources and help us fight the climate crisis by pulling carbon from the atmosphere and sequestering it in the ground.

Scope and Main Objective
Against this background this paper analyses fencing of lands as a prerequisite to biodiversity protection and faster water mechanisms, through tree planting in Makuein and Baringo Counties in Kenya. These two notable counties have varying agro-climate zones needing varying conservative interventions. These agro zones contrast in relationships to soil moisture index, precipitation, plant life and agriculture patterns. High potential areas have a moisture index greater than 50% but account for only 12% of Kenya's land area (Kabudo & Kabara 2015).

Temperatures have average of 22.9c and an average rainfall is 450-900mm with evaporation rates of 16502300mm.Survival depends on the inflows from rivers originating from the humid hill slopes of the drainage basin (World Lakes Database-ILEC).

These areas are mainly suitable for livestock farming (mostly cattle and sheep and key food crops (maize, beans and wheat) (Kabudo & Kabara 2015).Climatic variations affect crop and livestock systems both directly and indirectly and could have severe socio-economic impacts such as shortages of food, water, energy and other essential basic commodities, as well as long-term food insecurity (Kabubo-Mariara 2008a)There is however a gap of literature between a correlationship between Climate Change and food security in Kenya. This paper tries to resolve the underlying gap.

The general objective of this study is to investigate the relationships between climate change and food Security in Kenya, by studying Climate change Resilience, promoting biodiversity regeneration and land fencing.

Methodology

The paper examines county level data. The research employed both qualitative and quantitative approaches of research. The data was composed by questionnaires and key informants. The research paper targeted small holder farmers, women and youth and the general community at large.

The study used random sampling to select the study themes and purposive sampling to select key informants. Soil data, climate variables was sourced from the Ministry of Agriculture. The sampling setting was of 300 participants drawn from different cross cutting sectors including small scale farmers, women and youth and the general community in the two counties.

Table 1.1 Sample Distribution

County	No.of participating populations	20%	Total participating populations
Baringo	**180**	**180*20/100**	**36**
Makueni	**120**	**120*20/100**	**24**

(Mugenda 2003) mentions a sample size of more than 30 or at least 10% is appropriate for social science. The selected sample of 20% of the participating populations formed the sample of the study.
The study Used both quantitative and qualitative which included key informants small scale farmers, women, youth and the general community.

Table 1.2 Study methods, instruments and sources of information

Method	Tool	Source
Small holder Farmer, Women Youth, Community	**Questionnaire**	**Participating smallholders farmer, women youth, community**
	Key Informant Interview	**Ministry of Agriculture, Agriculture extension officers**

Results

Extreme change in precipitation was a major cause of crop failure. The majority of small holder farmers cited loss of crop as result of climate change due to the variability of precipitation. And this group cited precipitation as a major cause of crop failure. Hence it was reported a great loss of income and also loss of food security. These findings affected both women and youth as the most vulnerable groups. The study

found that climate change caused a huge burden to the community as drought prolonged and the rainfall season shortened. Women were forced to go great distances in search of water both for households. As Agriculture declined the youth resorted to social misfits engaging in substance abuse and the rate of crime swelled. Boreholes dried and a record decline in available water and so sustainable agriculture became almost impossible given the prevailing circumstances.

Discussion

Fencing was introduced in four farms. This helped prevent soil erosion and increased land productivity. It was observed that fencing created a micro climate in the said farms. Reduced precipitation by 26% and observed stalks of the maize plant increased in diameter. Planted millet also proved to be stronger than before. Horticultural production was introduced and seemed to do very well especially tomatoes did very well. Onions yield per acre increased as precipitation reduced. Food insecurity was projected to reduce by 32% and community incomes and livelihoods were projected to increase to 54%.

Conclusion

The study findings demonstrated that climate change has been a real challenge in Kenya. Farmers affirmed that vagaries of climate change were real and this was confirmed by persistent droughts, dried boreholes, crop failure, and change in temperature, increased pests and diseases. Loss of livestock as result of droughts was reported as a result of climate change.

Acknowledgements

African Alliance for Health Research Economic Development and National NGOs Council of Kenya.

References

Jane KABADO-Mariara and Millicent Kabara March 2017, Climate change and Food Security in Kenya
Kennedy Mwangi 2017, Adapting to Climate Change in Kenya, A case study
Ministry of Agriculture 2015, A handbook depicting the impacts of climate change to small holder farmers.
World Lake Database-ILEC