Mainstreaming Plant Genetic Resources Conservation in Climate Change Adaptation and Mitigation in Kenya

Kenya is home to more than 40 million people, 80% of whom live in rural areas and rely almost entirely on agriculture. More than 10 million people are chronically food insecure. The country’s food and nutrition insecurity is often attributed to the performance of the agricultural sector and although agriculture reached a growth peak of 6.5% in 2006, the sector’s strategies have not led to food security. Agriculture currently contributes about 24% to the country’s Gross Domestic Product (GDP) with food crops making up 32% of the agricultural GDP. The sustained growth of the agricultural sector is crucial to the overall economic and social development of particularly the rural small scale farmers. Unfortunately climate change and variability threaten to worsen the performance of this important sector, thereby increasing food insecurity especially among the poor.

Climate change in Kenya

Kenya’s economy is highly dependent on the natural resource base, making it highly vulnerable to climate variability and change. This has been exhibited through rising temperatures, and changing rainfall patterns resulting in increased frequency and intensity of extreme weather events such as droughts and flooding hence threatening sustainability of the country’s development. The Kenya Meteorological Department and State of the Environment Reports, covering the last fifty years, show variability and unpredictability in climate patterns and extreme climatic events. In most parts of the country rainfall patterns indicate increased irregularity and variability with neutral to slightly decreasing trends (GoK, 2013a).

One of the consequences of climate change is the impact on people and their livelihoods. Climate change leads to increased variability and intensity of droughts and floods, higher temperatures, redistribution of crop growing limits, loss of biodiversity and increased incidences of pests and diseases. Extreme climate and climate variability are already affecting the production of and access to food for different social groups thus rendering domestic agriculture less effective in meeting nutrition and food security needs. The adverse impacts of climate change have the potential to significantly inhibit the sustainable development of key priority areas in Kenya.

Natural ecosystems have been adversely affected by climate change. The decline in environmental quality has the potential to bring about social and economic hardship to the people who depend on these ecosystems, and increase contestation and likelihood of conflict over diminishing natural resources. It also creates a window for invasive species, new pests and diseases. Particularly vulnerable are the arid and semi-arid lands (ASALs) that are currently under threat from land degradation and desertification caused by climatic variations, human impacts and urbanization. The impacts include loss of biodiversity that is threatening continued species survival, change in vegetation composition and structure, and decline in forest and land cover.
The role of plant genetic resources to climate change adaptation and mitigation

Kenya is endowed with a rich diversity of plant resources that are conserved within and outside natural habitats. These have the potential to spur economic growth, mitigate poverty and enhance climate change adaptation through development of resilience in agricultural production systems and increasing crop productivity under uncertain climatic future. Diverse crops and varieties potentially form a natural insurance against climate change risk and provide the basis for adaptive crop management under progressive climate change and conditions. However, these valuable plant resources are threatened through destruction of natural habitats, over-exploitation, introduction of new improved varieties and climate change variability. This is compounded by a weak institutional framework for climate change adaptation and mitigation. Currently minimal effort has been made in integrating and bringing into convergence the institutional frameworks of climate change and those of conservation and sustainable use of diverse plant genetic resources. As a result, the contribution of a wide variety of plant genetic resources has not been well integrated in national climate change adaptation and mitigation plans and strategies.

Kenya has adopted Reducing Emissions from Deforestation and forest Degradation Plus (REDD+) strategy amongst its innovative approaches to addressing climate change mitigation and has initiated activities to implement the National Climate Change Action Plan NCCAP. The REDD+ strategy offers the best opportunity for sectors such as forestry to benefit from incentivized (Green House Gas (GHG) emission reduction efforts. This strategy operates on the premise that forest (as plant resources) management and conservation has a huge potential in mitigating against climate change.

Institutional arrangements for conservation and sustainable use of plant resources

Implementation of the National Climate Change Response Strategy (NCCRS) 2010 culminated in the development of the Climate Change Bill 2014 which proposes the creation of the National Climate Change Council that will be responsible for national coordination of climate change activities. It is imperative that issues of genetic resources conservation receive due recognition in the proposed Bill. Although several policies and regulatory frameworks recognize the importance of biodiversity including plant genetic resources, and identify strategies for their management, Kenya still lacks a comprehensive biodiversity policy and regulatory framework. As a result, effective conservation of plant genetic resources continues to be a major challenge.

There are several players and stakeholders working on conservation of plant resources in Kenya. Various government agencies are involved in the management and/or use of plant genetic resources. They include the Ministry of Environment and Natural Resources, National Environment Management Authority, Ministry of Agriculture, Livestock and Fisheries, Kenya Plant Health Inspectorate Service, Kenya Wildlife Service (KWS), Kenya Forest Service, Kenya Agricultural and Livestock Research Organization (KALRO) - Genetic Resources Research Institute (GeRRI), National Museums of Kenya (NMK) and Kenya Industrial Property Institute. An analysis of these institutions reveals that there are several overlaps and disconnects among their functions, thereby affecting management and coordination of environment and biodiversity conservation in the country. Moreover, most of these institutions are deficient of human, financial and infrastructural capacity to effectively perform their functions. This has further been complicated by the fact that the County Governments are now both regulators and administrators of natural and physical resources.

At the highest level, climate change, is coordinated by Climate Change Coordination Unit (CCCU) in the Office of the Deputy President, whose aim is to advise the Executive and to provide high level political support to climate change activities in Kenya, and assist in integration of climate change into other Government ministries and sectors. Other institutions currently supporting climate change adaptation and mitigation activities at the national level include the National Climate Change Secretariat (NCCS) of the Ministry of Environment and Natural Resources which coordinates climate change activities within its departments; National Environment Management Authority (NEMA), Kenya Meteorological Department (KMD) and Department of Resource Surveys and Remote Sensing (DRSRS). Ministries such as Agriculture, Livestock and Fisheries; Energy; Water and Irrigation; Transport and Infrastructure; and state agencies including KALRO, NMK and KWS have climate change units which are independent of the NCCS. While plant genetic resources are widely acknowledged as possible solutions to climate change adaptation and mitigation, few institutions have incorporated issues of plant genetic resources in their climate change strategies and interventions.
Recommendations

1. Review the current policies and regulatory frameworks having implications on plant genetic resources management with a view to identifying areas of conflict and make recommendations for a policy framework that promotes conservation and sustainable utilization of plant genetic resources.

2. Review the functions of institutions charged with the responsibility of conserving plant genetic resources and make recommendations for improving effectiveness and enhancing synergy and complementarity, for adoption.

3. Enhance the capacity (human, finance and infrastructure) of institutions engaged in promoting and regulating conservation of plant genetic resource.

4. Identify at national and county levels, mechanisms for integrating and mainstreaming plant genetic resources conservation as one of the strategies for climate change adaptation and mitigation, and for sustainable development.

5. Engage County Governments, as partner custodians of natural resources, to mainstream biodiversity conservation as a strategy for adapting and mitigating against climate change, so as to ensure food and nutrition security, and income generation.

Bibliography

FAO. 2015. Coping with Climate Change: the roles of genetic resources for food and agriculture.


Authors

Desterio Nyamongo, Elizabeth Okwuosa, Stephen Kimani, Geoffrey Ngae, Grace Mbure, Joseph Kimani, Dan Kiambi, Zipora Otieno

Citation


The authors would like to acknowledge funding from the Benefit Sharing Fund of the International Treaty on Plant Genetic Resources for Food and Agriculture and the United Nations Development Programme (UNDP Kenya) for supporting the work that culminated in the production of this policy brief.

The editorial input from Dr. Victor Wasike, Dr. Lusike Wasilwa, Dr. Margaret Makelo, Dr. Muo Kasina, Dr. Rahab Muinga, Mr. David Om-balo, Mr. Mwangi Mwariri and Mrs. Violet Kirigua is also appreciated

GeRRI is an institute of the Kenya Agricultural and Livestock Research Organization (KALRO).

GeRRI Policy briefs aim to deliver concise key messages and relevant reading on genetic resources conservation, utilization and access for decision makers. These decisions will be expected to impact on poverty reduction by contributing to increased productivity, commercialization and competitiveness of the agricultural sector propelled by science, technology and innovation.

Contact us at:
Genetic Resources Research Institute (GeRRI)
P.O. Box 781 - 00902 Kikuyu, Kenya
Tel: 020 - 2025539
Email: director.grri@kalro.org
http://www.genetic.kalro.org