

## AGRA Knowledge Series

# Western Kenya Project Yields Replicable Land Management Model for Rest of Africa

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**In the last two decades, various high-profile conversations have taken place to define the future of African agriculture.**

Some of these discussions have led to continent-wide resolutions, like the Malabo Declaration of 2014, which pursues solutions for the food and hunger challenges facing the continent.

Among the strategies for the achievement of permanent food security is sustainable land use. This is especially after the UN predicted that Africa's population will double in the next three decades to 2.2 billion people, further increasing pressure on the already vulnerable natural resources in the continent.

In fact, a recent report by the Food and Land Use Coalition titled: People, Health and Nature: A Sub-Saharan Africa Transformative Agenda, suggests that as a result of overexploitation, sub-Saharan Africa could lose over 70 million hectares of forest by 2050. The cost of this natural capital loss is estimated at US\$170 billion per year.

### **Model programme**

Against this backdrop, the Alliance for a Green Revolution in Africa (AGRA), together with the Global Environment Facility (GEF), the UN Environment Programme (UNEP), the Kenya Agriculture and Livestock Research Organization (KALRO) together with three County Governments (Kakamega, Nandi and Vihiga) and other stakeholders designed and implemented a sustainable land management model project in food systems and agriculture that would ease the negative impact on land and other farming resources in Western Kenya. Sustainable land management refers to practices and technologies that



aim to integrate the management of land, water, biodiversity, and other environmental resources to meet human needs while ensuring the long-term sustainability of ecosystem services and livelihoods.

The project, : **Scaling up Sustainable Land Management and Agro-Biodiversity Conservation to Reduce Environmental Degradation in Small Scale Agriculture in Western Kenya**, sought to show that land degradation adversely affects the ability of smallholder farmers to produce adequate food supplies for their families and national economies.

This was premised on earlier findings that the costs of land degradation attributed to land use and land cover changes in Kenya reached the equivalent of US \$1.3 billion annually between 2001 and 2009<sup>1</sup>. More data showed that over 12 million Kenyans<sup>2</sup> are making a living in degraded lands, with the costs of soil nutrient mining for important staple crops being estimated at US \$270 million annually<sup>3</sup>.

The Western region of Kenya was identified as a good area for this project because of its dense population, and notable trends of encroachment into protected resources such as Kakamega and South Nandi forests. The three counties -Kakamega, Vihiga and Nandi - that were selected for the project - account for seven percent of Kenya's total population even as they only occupy just one percent of the country's landmass. One of the counties, Vihiga, is, indeed, the most densely populated rural area in Kenya with a population density of over 1,000 persons per square kilometer, far above the national average of 66 persons per square kilometer. In total, more than 3.3 million people live in the three counties covered by this project, according to the 2019 Kenya National Housing and Population Census. The population bulge has resulted in increased demand for food, shelter, water, energy, and waste disposal. Unable to meet these needs on their low-

production landholdings, locals have encroached into the neighbouring Kakamega forest to open up new farms and obtain timber, fuelwood and medicinal herbs for sale to supplement their incomes.

### **Restoration plans**

To reverse the damage already caused, the project sought to restore the productivity of over 10,000 hectares of farmlands in the three target counties through sustainable land management with the intention of doubling the yields for maize and beans, the region's staple crops, and deterring further intrusion into forest land.

So far, 6,090 hectares have been put under sustainable use with 76 percent of the beneficiaries adopting appropriate techniques such as crop rotation. Land degradation has also been slowed through the planting of 282,758 tree seedlings and several water resources have been rehabilitated to provide sustainable supply of water and other environmental services.

Similarly, there is increasing evidence of the end-results of better management of climate risks in rainfed maize farming systems through the introduction of hybrids that produce multiple cobs on one stem. With a recommended spacing of 4- 5 plants per square meter, the hybrids can provide enough yields to compensate for shortages in unfavorable seasons. This in addition to more savings on seed costs.

Additionally, three community-based systems for indigenous vegetables have been established to give farmers regular and affordable access to locally-adapted and high-yielding seeds. To complete the value chain, farmers were connected to reliable markets through 20 new small and medium agricultural enterprises.

### **Gains for farmers and biodiversity**

The benefits of the investments have been encouraging with a 17 percent increase in farmer incomes in just over two years. Households in the project reported additional incomes of

<sup>1</sup> Mulinge W. et al. (2016). Economics of Land Degradation and Improvement in Kenya.

<sup>2</sup> Le, Q. B., Nkonya, E., & Mirzabaev, A. (2014). Biomass productivity-based mapping.

<sup>3</sup> Mulinge W. et al. (2016). Economics of Land Degradation and Improvement in Kenya.

US\$120 (or KES13,140) in each of the two annual growing seasons from the sale of maize, beans and indigenous vegetables<sup>4</sup>.

Presently, the value of traditional African vegetables (TAVs) in Kakamega alone is estimated at US\$1.5m (KES164.3 m)<sup>5</sup>. This is a great outcome because while in the past the African vegetables value chain was deemed unattractive, today the average smallholder farmer in western Kenya earns more from the TAVs than the traditionally popular maize and beans. Yielding US\$449 (KES49,165) in revenues per year for each farmer, TAVs now more than double the income from beans (US\$199 or KES21,791)<sup>4</sup>. They also outperform maize, which yields an average of US\$307 (KES33,617) per farmer annually.

That said, the income farmers receive from their maize and bean crops has also increased, with 14 farmer groups aggregating and selling 2,169 metric tons of maize and beans, valued at US\$9,800 (KES1.07m) in the October 2019 – January 2020 growing period<sup>4</sup>.

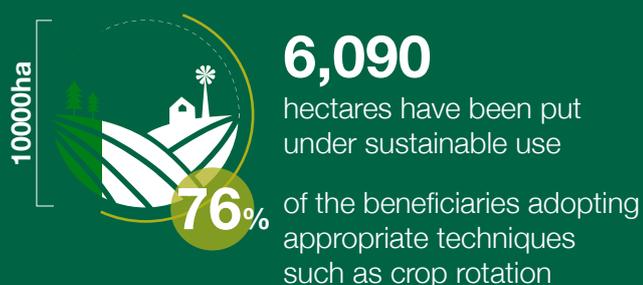
Dairy farmers in the region are also reporting a 33

percent increase in milk production after adopting highly nutritious fodder species promoted by the project<sup>4</sup>. This has in effect reduced pursuit of pasture in the forest, essentially evading invasion into these protected ecosystems.

Overall, the project has helped in reducing the region's poverty levels, with farmers' monthly incomes rising from \$105 to \$240 (KES11,498 – KES26,280), a 129 percent increase<sup>4</sup>. A daily income of \$8 (KES876) for farming households in the region is an indication of progress towards rising above the international poverty line of US\$1.90 (KES208) per person per day.

By showing smallholder farmers the direct, quantifiable benefits of restoring and maintaining landscapes, the project has succeeded in encouraging farmers to adopt climate-resilient farming practices, ensuring better outcomes for biodiversity. Notably, the gains made through the project have confirmed agricultural biodiversity as the premier link in the global food chain. The project has demonstrated that biodiversity plays a major role in the provision of quality food for humans and livestock in addition to reliable

## Sustainable Land use



## Gains for farmers and biodiversity



<sup>4</sup> Kiwia, A.M., Ayaga, G., Ngombe, A., Macharia, J. and Zeila, A. (2020). Enhancing environmental services and food security

<sup>5</sup> Kiwia, A.M., Ayaga, G., Ngombe, A., Macharia, J. and Zeila, A. (2020). Enhancing environmental services and food security



sources of income and energy.

### **An innovative approach**

So, how was the program planned, for it to yield these benefits?

First, the project was developed as an innovation platform, the Focal Area Development Committee (FADC). An innovation platform is a physical or virtual multi-stakeholder forum that brings together different actors to solve a common problem. Innovation platforms bring together individuals from different backgrounds in a common forum to identify problems and opportunities and set ways to achieve their goals. The project's FADC is currently comprised of farmers, traders, food processors, researchers and government officials.

Through the FADC, farmers neighboring the forests were organized into 10 micro-catchments, which are essentially community-based formations governed by rules and regulations (by-laws) that define their purpose of increasing food and income while conserving the environment. The micro-catchments have been instrumental forums in the sensitization and training of farmers on sustainable land management. This is in addition to serving as active champions of farming-as-a-business where strategies such as value addition and the collective negotiation of prices are enhanced.

Initially, the FADC focused on promoting the adoption of improved agricultural production technologies. It later transformed to support the introduction of new and high-value crops such as indigenous vegetables, which have now become the main value-chain crops of the platform. The sustainability measures that the FADC has put in place include the diversification of the value chains to include dairy, poultry, bananas and

crops like pumpkins and watermelons.

### **It doesn't stop there**

Already, there is growing evidence of landscape restoration for increased flow of agroecosystem services and the building of resilience to climate change. There is also less reliance on the region's natural capital assets for households as their direct sources of livelihoods.

However, for an even bigger impact, more investment is required as communities in western Kenya continue to be heavily dependent on biological resources that are protected by national law. For instance, dependence on the Kakamega Forest is still high. About 59 percent of residents in areas adjacent to the forest indicated that they get beneficial products from it, with direct resource extraction cited by 46 percent of respondents.

Fuelwood is the most commonly extracted resource although communities also regularly target the forest for traditional medicines from trees such as *Zanthoxylum gillettii*, *Trichilia emetica*, *Olea capensis*, *Entada abyssinica* and *Croton macrostachyus*.

In order to support sustainability, there is an immediate need to regulate the exploitation of protected resources in the region through investments that drive people living in the region towards conservation. Through the project we have learnt that taking this initiative to scale requires a multi-pronged approach of investments at farm level, local private sector and at county level. This type of investment allows for interaction and planning among the different players and encourages an inclusive approach towards development interventions.

As a starting-point, the sustainable land



management study project in Western Kenya has proven to be a credible model that can be replicated elsewhere with beneficial results.