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Agriculture and
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Organizational Endline Study: Report for Nyando, Kenya

CGIAR Research Program on Climate Change,
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Introduction

This report summarizes the findings from the Organizational Endline Survey (OES) carried out in Nyando Climate-Smart Village in June and July 2021. The survey is a complementary module to the household and the village endline surveys conducted over the same period. While the household and village surveys provided information from the beneficiaries, OES provided information from the service providers themselves. The three survey modules together provide comprehensive information on the impact of CCAFS interventions over the last ten years.

The objectives of the OES were twofold: i) To monitor changes in objectives, priorities and activities of organizations working in the local food and nutrition security ecosystem; and ii) To understand the provision of and changes in information/services at the local level that informs farmer decision-making about livelihood strategies in response to climate change.

Organizations interviewed

The number of organizations working in the Nyando in the area of food and nutrition security and natural resource management has increased relative to the baseline. However, some organizations which operated at baseline have since stopped their operations. Sixteen organizations were interviewed, and these organizations were identified and mapped during the village focus group discussions. The organizations include One Acre Fund, World Vision, SNV Netherlands Development Organization, Kenya Agricultural and Livestock Research Organization (KALRO), Ministry of Agriculture (MoA), Practical Action, Bioversity, MAGOS, Support for Tropical Initiatives in Poverty Alleviation (STIPA), Friends of the Old (FOTO), HANDS and community-based organizations Friends of Katuk Odeyo (FOKO) North-East Community Development Programme (NECODEP) and Kapsokale. FOKO, NECODEP and Kapsokale are community-based organizations.

Figure 1 shows the organizational landscape in Nyando, including interactions among the organizations. A brief description of their activities is presented in Table 1. While the organizations in Nyando may not be working closely with each other (as was the case even at baseline), it is clear that all of them work closely with the Ministry of Agriculture (MoA) and the community-based organizations such as FOKO and NECODEP (Figure 1). Similarly, while the organizations worked closely with the CBOs even at baseline, the relationship with MoA seems to be an emerging trend, most probably due to devolution of agriculture and close monitoring of agricultural interventions by the county government. The MoA, therefore, provides a framework through which the activities of the organizations could be coordinated for synergy and optimal outcomes.

Figure 1. Organizational Landscape in Nyando in 2021

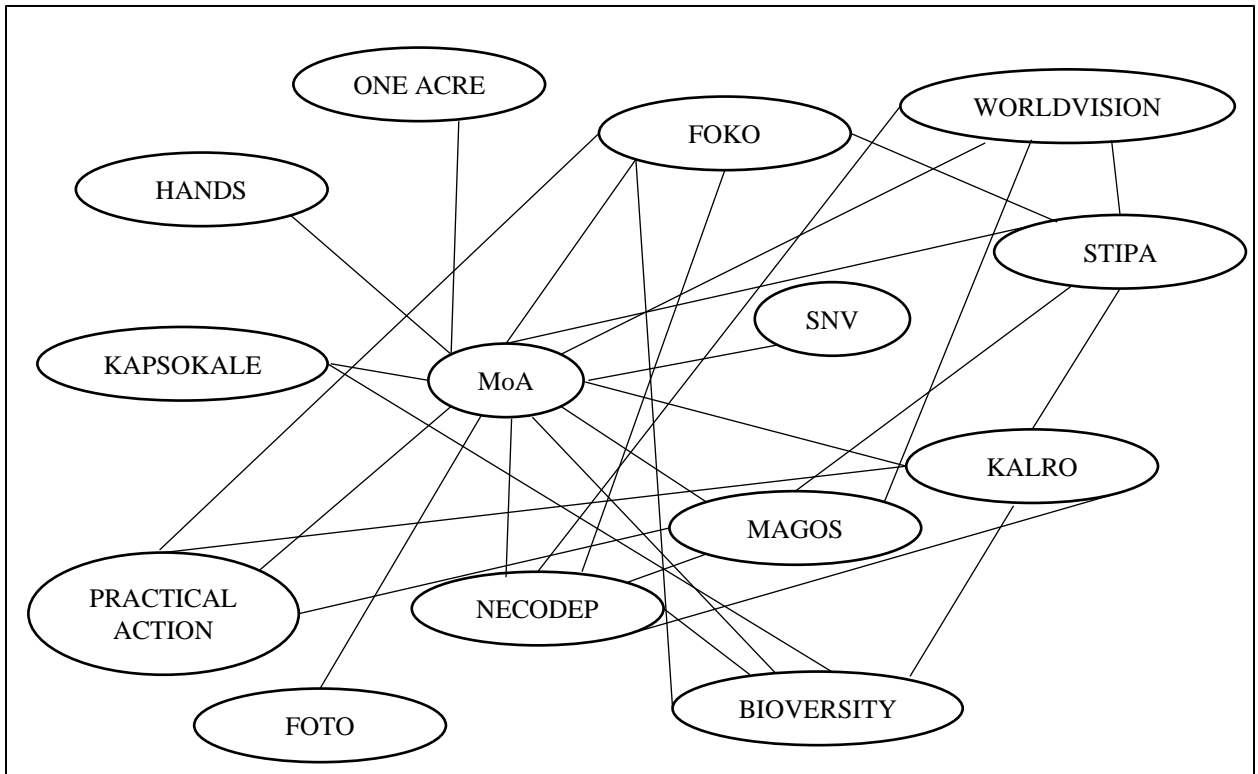


Table 1. Organizations and their activities

| Organization | Main areas of activity |
|-------------------------------|---|
| One Acre Fund | Offers financing and training solutions to small-scale farmers, provides high-quality agricultural inputs on credit and trains on modern farming techniques. Also promotes strategies for climate change adaptation and mitigation. |
| World Vision | Increasing food production for nutrition and market, improving household income, community capacity building on resilience to environmental shocks, e.g. floods and drought and sustainable use of water and other natural resources. |
| SNV | Capacity building in vegetable value chain, regenerative agricultural seed system, commercialization of traditional vegetable and strengthening vegetable seed system. |
| FOTO | FOTO works on reducing and eliminating water-borne diseases in lower Nyakach, the welfare of the elderly and assisting vulnerable girls to achieve basic education and improving food security. |
| Practical Action | Focuses on increasing youth participation in agribusiness, promoting agroecology practices for increased farm productivity and influencing policy environment for youth in agribusiness. |
| MAGOS | Improving access to farm inputs, improving access to markets by linking farmers with buyers and improving agricultural yields through proper use of inputs. |
| HANDS | Improving nutrition of Early Childhood Development (ECD) children and the community. |
| STIPA | Focuses on enhancing inclusivity, sustainable development and ownership of projects. It ensures access to quality, accessible and affordable healthcare for vulnerable groups. |
| Bioversity | Helps farmers to adapt to climate change through crop diversification, increasing access to appropriate seed through the seed banks, enhancing value addition and building capacity of farmers in variety selection, value addition, business and financial management. |
| MoA – Nyakach Sub-county | Increasing productivity, promoting agricultural marketing and environmental conservation. |
| MoA – Soin/Sigowet Sub-county | Increasing productivity, capacity building of farmers on best technologies available, improving farmer incomes through farmer groups and value addition. Also works on reducing soil erosion and maintaining soil fertility, and improving nutrition among households through improved knowledge on food utilization. |
| KALRO-Genebank | Enhancing conservation of traditional crops, promoting climate-resilient varieties and ensuring a secure supply for farmer preferred varieties. |
| KALRO-Kibos | Focuses on increasing productivity, conserving soil and environment and ensuring increased farmer incomes through value addition. |
| FOKO | A community-based organization (CBO) which mainly works on improving food security, environmental conservation, promoting social capital and linking the community to other partners. |
| NECODEP | A CBO focuses on building capacity of farmers, soil erosion control, promotion of tree planting and environmental management e.g. desilting dams. |
| Kapsokale | A CBO with a focus on farmer training, linkage with other specialized organizations, making improved seeds available within easy reach of farmers and offers grants for business. |

Summary of activities

Food security

The 16 organizations working in the area focused on one or more components of food security. Most efforts are geared towards increasing food availability through capacity building of farmers and/or provision of seed to increase agricultural production and productivity. A few of the organizations are also involved in the components of food access and utilization. Table 2 summarizes the activities related to agriculture, food security and markets.

Table 2. Services and information provided on agriculture, food security and market related decision making

| Organization | Agriculture | Food security | Market |
|---------------|--|--|--|
| One Acre Fund | Training farmers on agronomic practices from planting to harvesting Training on post-harvest handling and providing storage bags Observing crop performance and giving advice Providing farm inputs - seeds, fertiliser, pesticide, etc | Timing of planting Training on soil health, crop rotation and soil management practices Provide financing for seeds and fertilizer Offer crop storage solutions | Crop storage technique that helps farmers to time crop sales to maximize profits |
| World Vision | Training of farmers on improved agronomic practices | Training on choice of enterprises Training on agronomic practices | Training on enterprise selection Training on value addition |
| SNV | Training on vegetable production and business development services through demonstration farms | Training on importance of nutrition, with a focus on vegetables in diets | Linkages with market players |
| FOTO | Provide seeds to the old people Train on agronomic practices Post-harvest management Advice on selection of varieties Timing of planting | Multi-storey gardens for vegetable production to meet the family needs Support to staff and vulnerable girls to start small scale poultry farming | Collective marketing of poultry |

| Organization | Agriculture | Food security | Market |
|--------------------------|--|---|---|
| Practical Action | Youth mentorship in agribusiness Volunteer model farmers - experimentation plots for youth to learn, learning grounds for ecology Collaborators and entrepreneurs who share the vision are- funded to coach youth in best practices Provides loans through Youth Savings and Loaning Association (YSLA) model Market interest groups to help roll out interventions within the community | Sensitization programs on food security in partnership with the County government and other stakeholders, e.g. diversification of production | Market interest groups - market surveys, negotiation, value addition, marketing apps Market linkages and linkage with potential buyers |
| MAGOS | Appropriate farm inputs Crop protection through safe application of agrochemicals Safe disposal of agrochemical waste | Post-harvest handling and storage | Linking farmers to buyers of various farm produce |
| HANDS | Increasing productivity through organic farming | Increasing productivity through organic farming | |
| STIPA | Use of improved agricultural production technologies Promotion of improved seed (early maturing) Promotion of tree planting Promotion of kitchen gardens | Setting aside part of produce for household use Training on dietary diversity | Linking to markets Formation of farmer groups for collective marketing |
| Bioversity | Catalogue of best performing seed varieties Linking seed banks across countries in the region A nationwide seed bank platform has been established Technical support, e.g. building the capacity of farmers in improved agronomic practices | Best performing varieties Multi-stress tolerant varieties Planning for consumption (vision planning) before sale Vegetable production by women farmers - throughout the year | Linking farmers to private sector companies for purchase of produce Exchange of market information through the nationwide seed bank platform |
| MoA – Nyakach Sub-county | High yielding crop varieties Farm plan Gross margin analysis Promotion of new technologies | Use of appropriate seed varieties Use of irrigation for increased production Good storage practices Value addition | Training on market surveys Packaging for sale Forming groups for collective marketing |

| Organization | Agriculture | Food security | Market |
|-------------------------------|--|---|--|
| MoA – Soin/Sigowet Sub-county | Training on crop production technologies and demonstrations Extension services Fertilizer subsidy | Selection of suitable crop varieties and improved varieties Introduction of nutritious crop varieties and educating the farmers on the different varieties Crop diversification | Market surveys and sharing market prices with farmers every week Linking farmers to markets and buyers |
| KALRO Gene Bank | Seed harvesting and processing Seed storage Agronomic practices | Diversified production Community seed banking | |
| KALRO Kibos | Apps for choosing crop varieties Mobile Application for weather prediction Training agricultural extension staff | Introducing climate-smart crops to increase production of food crops Crop diversification | Formation of marketing groups and introducing collection centres Value addition Mobile Application for marketing |
| FOKO | Dissemination of weather forecast as received from MoA Outbreak of diseases - early warning as received from MoA through App New and emerging technologies- demonstration to farmers Extension through farmer field schools Soil management practices training | Suitable crop varieties, e.g. sorghum, early maturing crops Crop diversification as an insurance Pest control methods Storage and preservation crops (biotic approaches) Value addition | Linking with MoA for markets Linking with World Vision for connection to market |
| NECODEP | Information on new and improved crop varieties Information on farm inputs Early warning, e.g. disease outbreak Provision of inputs Monitoring of activities on farmers' fields | Early land preparation Choice of multiple stress-tolerant crop varieties Provision of horticultural seeds | Linking farmers to buyers Market for improved small ruminants |
| KAPSOKALE | Training of farmers Administering grants credit services to farmers | Training on improved farming approach Extension services through volunteers Provision of improved seed | |

Natural resource management

The OES found that all the organizations working in the areas had activities related natural resource management, weather and climate change mitigation. There is an increase in the number of NRM activities in the CSVs, more empowered CBOs, which in turn is empowering the community. There is still need for more collaborations among local CBOs and other organizations working in the area. In addition, there is a need to build the capacity of communities for sustainability of the activities being implemented.

The predominant activities under natural resource management are environmental protection and rehabilitation, mainly through tree planting, sustainable farming, soil and water conservation, water management and renewable energy use. Activities of the various organizations in relation to natural resource management are summarised in Table 3.

Table 3. Services and information on natural resource management, weather and climate change adaptation and mitigation

| Organization | Natural resource management | Climate change adaptation | Climate change mitigation |
|---------------|---|--|---|
| One Acre Fund | Promotes use of solar by providing solar lamps on credit and training on how to use them Trains farmers on how to make compost manure to boost soil fertility Promotes agroforestry | Provide early maturing and drought-tolerant seed varieties Train farmers to time rainfall season-provide the technologies Crop insurance Promote agroforestry Conservation agriculture | Agroforestry Conservation agriculture - in piloting stage Increasing soil carbon stocks Promoting use of renewable energy, e.g. solar energy |
| World Vision | Provided dam liners for water harvesting Water pumps for irrigation Greenhouse and shed net for horticulture Dairy animals Poultry etc | Training on environmental conservation Training on Climate-Smart Agriculture | Training on environmental conservation |
| SNV | Plans to roll out soil conservation measures | | Training on soil and water conservation. Training of Trainers (ToTs) already conducted, while farmer training is yet to take place |
| FOTO | | Advice on planting time | |

| Organization | Natural resource management | Climate change adaptation | Climate change mitigation |
|-------------------------------|--|---|--|
| Practical Action | Vermiculture technology - production of organic fertilisers | Weather information through a mobile application | Agroecology practices, e.g. organic fertilisers, biopesticides, shade-net technology, solar irrigation kits (provided as grants), crop rotation, IPM |
| MAGOS | Water harvesting, designed and built dams and greenhouses | Promotion of water conservation and proper irrigation Analyzing weather data collected by farmers and interpreting and communicating the results | Sourcing and supplying tree seedlings and fruit trees |
| HANDS | | | Agroforestry Organic farming |
| STIPA | Soil conservation Forest conservation | Time of planting, working with MoA | Planting of trees and protecting indigenous trees |
| Bioversity | Agroecological intensification | | |
| MoA – Nyakach Sub-county | Protection of indigenous trees Water harvesting technologies Proper use of agro-chemicals Minimum tillage | Timely planting Weather update Identifying crop varieties for planting in a given season depending on predicted weather Introduction of climate-resilient livestock breeds Dissemination of climate-resilient crops Water harvesting through water pans, boreholes and water tanks | Tree planting and agroforestry |
| MoA – Soin/Sigowet Sub-county | Methods of soil and water conservation | Weather forecast - sharing information from meteorological department to farmers Identification of crop varieties depending on predicted weather In partnership with CCAFS, gave some weather equipment to | Promoting use of organic manure through Kenya Climate-Smart Agriculture Project (KCSAP) Soil water conservation Promotion of tree nurseries, especially fruit tree seedlings |

| Organization | Natural resource management | Climate change adaptation | Climate change mitigation |
|-----------------|---|---|--|
| | | help farmers understand rainfall patterns | |
| KALRO-Gene bank | | Awareness creation | |
| KALRO-KIBOS | Good agronomic practices, e.g. minimizing use of agrochemicals Zero or minimum tillage Use of manure and making compost | Mobile Applications for weather forecasting Early land preparation | Minimum tillage technology Introduction of fruit trees and agroforestry |
| FOKO | Information and input for soil conservation, e.g. Vetiver grass Promotion of fruit trees, especially among farmers with small pieces of land | Disseminating weather forecast information to communities from partner organizations | Tree planting and establishment of tree nurseries |
| NECODEP | Training on tree planting and protection of indigenous trees Protection of wetlands and riparian lands Provision of tree seedlings Mobilizing for rehabilitation of degraded areas, especially roads | Weather forecast as received from government agencies | Tree planting Promotion of solar lamps and solar water pumps |
| KAPSOKALE | Provision of tree seedlings Mobilizing labour for building of water pans Coordinating soil erosion control activities | Training on appropriate seed, early land preparation, early planting Disseminating weather forecast information to community members | Tree planting Encouraging adoption and use of solar lamps |

Conclusion

The many and diverse organizations operating in Nyando have done and continue to do impressive work towards improving food and nutrition security and enhancing natural resource management. However, these organizations tend to work on their own (in silos), limiting their impact on the community. To take the community to the next level, the organizations are unanimous on four issues. The first issue relates to water scarcity, which is a major constraint to implementing climate-smart agricultural technologies and innovations. Hence, the implementing organizations suggested technologies which would help solve the problem: water conservation measures, e.g. protection of water catchment areas, water harvesting technologies, e.g. excavation of water pans, promoting water use efficiency technologies, e.g. drip irrigation systems and building dams that can be used for irrigation during dry seasons.

The second issue is soil degradation, which is likely to reverse the gains in implementing climate-smart agricultural practices. Thus, soil conservation must be pursued as a priority and urgent measure. The organizations recommended technologies for enhancing soil health: agroforestry and afforestation to prevent soil erosion and enhance carbon sequestration, payment of carbon credit to encourage farmers to plant more on-farm trees for carbon sinks, planting cover crops and mulching to enhance soil moisture retention, *Fanya juu* terracing to prevent soil erosion and use of organic materials such as compost and farmyard manure to improve soil physical and chemical properties. To enhance the resilience of farmers to climate change-related risks, the organizations recommended increased use of drought-tolerant varieties of different crops such as cereals (e.g. maize and sorghum), legumes and vegetables.

Lastly, because most of the organizations work in related areas, it may be more important to take advantage of the synergies instead of each of them operating in a silo with, most probably, very limited resources. This may be achieved through deliberate alignment of programs and projects and a sector coordination framework, results monitoring and learning, and mutual accountability. This can only be spearheaded by the county government, and supported by the national government through appropriate policies and institutional frameworks.