Uganda's National Adaptation Programme of Action

Implementation, Challenges and Emerging Lessons

Project Report

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RESEARCH PROGRAM ON
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This document aims to disseminate interim climate change, agriculture and food security research and practices, and stimulate feedback from the scientific community.

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Abstract

The agrarian economy of Uganda has been declining due to many factors including climate change. With the majority of Ugandans depending on agriculture and agricultural related activities for their livelihoods, this decline is threatening their survival as well as Uganda's future economic development. The changing climate is further compounding the problem of declining agricultural production, prompting the Government of Uganda (GoU) to take measures to address its the impacts. In 2007, Uganda submitted its National Adaptation Programme of Action (NAPA) to the United Nations Framework Convention on Climate Change (UNFCCC). The submission was made based on Uganda's commitment to address climate change impacts as a signatory to the convention.

The NAPA aimed to prioritize and implement initiatives that respond to communities' urgent needs to adapt to climate change. The NAPA identified nine adaptation priority areas. These included community tree growing; land degradation management; strengthening meteorological services; community water and sanitation; water for production; drought adaptation; vectors, pests and disease control; indigenous knowledge and natural resource management and climate change and development planning. This report assesses the status of the NAPA projects in Uganda, identifying the major activities for each of the projects, target beneficiaries and outcomes, including lessons learned and challenges arising from implementing the projects to inform policy. The report is based on a review of existing reports and other published literature from a variety of sources on NAPA in Uganda and interviews of personnel in various government departments, sub-county officials and beneficiaries.

Implementation of the NAPA was initiated in 2012 with funding from the Danish government for one-year (2011/12). The NAPA projects were piloted in four districts—Apac, Pallisa, Bundibugyo and Nakasongola—located in different ecosystems (arid, semi-arid, lowland and highlands). The initiative was led by the Ministry of Water and Environment (MWE), working with different agencies and local government to implement the activities at community level. Activities implemented within each of the projects focused on agriculture, energy and water. The target population for NAPA activities included men and women. Each district implemented on average 8-10 different adaptation actions, however, sustainability of

the NAPA projects was not considered from the onset. The NAPA process did not establish a sustainability strategy as part of a comprehensive monitoring and evaluation plan. While the aim of the NAPA projects was to build community resilience, beneficiaries were not ready to adopt the new climate resilient technologies without more assistance from the project at the end of the implementation period, except for water storage tanks and the valley dam technologies.

The implementation period of one year was not sufficient to build long-term sustainability of the adaptation activities amongst communities, and the lessons learned have not been documented. Luckily the NAPA process created an opportunity for learning and identifying challenges that communities are facing in adapting to climate change, which were used to develop the National Adaptation Plan (NAP), Intended National Determined Contributions (INDC) and the Climate Smart Agriculture Program (2015-2025). Specifically, some of the activities implemented in NAPA are also outlined in the INDC, CSA program and NAP. Prominent inclusion of climate change adaptation actions have also been made on some of the polices and plans such as the National Development Plan, National Policy for Disaster Preparedness and Management, National Climate Change Policy.

At local level, issues of climate change adaptation are difficult to tackle, due to lack of knowledge on the effects and impacts of climate change and budgeting allocation for adaptation actions. As of 2015, despite adoption of the various policies and plans outlined above, Uganda's national government is not allocating funds for local level adaptation. What are some of the emerging lessons from implementing NAPA pilot projects in Uganda? First, involving the community right from vulnerability assessment is essential for identification of adaptation strategies. Second, capacity building for community to manage and implement activities takes time and requires a lot of patience and commitment. Third, capacity building is necessary for local and national government staff to enable them to implement, monitor and evaluate projects with a gender lens. Lastly, community livelihoods are multifaceted and hence one activity is not sufficient to build adaptive capacity. Therefore, local governments need to promote multiple inventions that address climate change that build community resilience.

Keywords

Climate Change; Adaptation; NAPA; Uganda; Community.

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Contents

Acronyms

ASDI	Agency for Sustainable Development
CBOs	Community-Based Organizations
CCU	Climate Change Unit
DLG	District Local Government
IPCC	Intergovernmental Panel on Climate Change
LDCs	Least Developed Countries
MWE	Ministry of Water and Environment
NAPA	National Adaptation Programme of Action
NGOs	Non-Governmental Organizations
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
GEF	Global Environment Facility

1. Introduction

1.1 Uganda's changing climate and its impact

Uganda's climate is dynamic with high temporal and spatial rainfall variability due to large scale oscillations in atmospheric and ocean circulation (the El-Nino Southern Oscillation [ENSO] and lesser known events such as the Indian Ocean Dipole reversal) (Mubiru et al. 2012, Mutai and Ward 2000, Camberlin et al. 2001, Camberlin and Philippon 2002). Studies show that temperatures are likely to increase in Uganda by up to 1.5 °C in the next 20 years and by up to3.2°C by 2080s (IPCC 2014, Thorton et al. 2006). Additionally, if global greenhouse gas (GHG) emissions are not reduced, Uganda is more likely to see temperatures increases by up to 4.3°C by 2080s (Nakicenovic and Swart 2000, Goulden 2006, IPCC 2007). Changes in rainfall patterns, annual rainfall amounts and rainfall intensity are expected but there is less certainty (Lyon and DeWitt 2012). Seasonality of rainfall could also change in the future with highest percentage increase in rainfall during the current driest months (December, January and February). The current wet season from March to May might shift forwards in time or the September to November rains, may extend (NEMA 2010).

Agricultural production is dependent on rainfall thus making about 85% of the Ugandan population vulnerable to climate change (Government of Uganda, Bureau of Statistics 2012). Some of the farmers are responding to the changing climate by altering their use of agricultural inputs including fertilizers and seeds, intercropping a variety of crops, changing their mix of crops, or abandoning agriculture altogether. Frequent incidences of drought and extreme rainfall events are causing widespread damage to lives and livelihoods. For example, floods in 1961/62, 97/98 and in 2007 saw widespread infrastructure damage, displacement and destruction of livelihood assets (Government of Uganda, Ministry of Water and Environment 2008). In 2010 heavy rainfall led to massive landslides (Government of Uganda, Office of the Prime Minister 2011). Since 1979, about 4.11 million people have been affected by climate related disasters, of which 3.2 million have suffered severe droughts, 900,000 have been impacted by flooding and 100,000 by climate related disease epidemics (Government of Uganda, Office of the Prime Minister 2011), exacerbated by other stresses such as land degradation and insecurity, changes in rainfall reliability, onset and cessation that have led to

crop failures and hunger (Lyon and DeWitt 2012). The most severe impacts are in agricultural and agricultural-related sectors (such as environment, infrastructure and health (UNEP 2002, Government of Uganda, Ministry of Water and Environment 2007, Orindi and Eriksen 2005) (Table 1).

Table 1. Effects and impacts of climate change on agriculture and related sectors

Sector	Climate Change Effects			
	Increased rainfall amounts and shift in seasonality	**Frequent drought occurrence**	**Higher temperatures**	**Impacts**
Agriculture and food security	Change in crop yields. Increased diseases and emerging new ones. Increased erosion and land degradation affecting crop and fodder production	Crop & fodder failure. Less water for crops & animals. Reduction in grazing potential within the cattle areas	Shifts in suitable lands for some crops e.g., coffee. Decreased crop & livestock yields. Higher evapotranspiration rates	Increased food insecurity and poverty; loss of incomes; loss of livelihood options
Environment and biodiversity	Shift in habitats for plants and animals. Changes in growing and flowering seasons	Loss of biodiversity in agricultural landscapes. Changing ecosystem dynamics and production	Loss of biodiversity in agricultural landscapes. Changing ecosystem dynamics and production	Yield decrease in biodiversity and agro- ecological systems; increased pressure on other resources e.g. forests
Human health	Increased flood and landslides. Increased incidences of waterborne disease; increased animal diseases	Food shortage & famine risk. Water conflict for human/crop/livestock. Increased water related diseases	Increased incidences of diseases and shifts in areas affected by diseases e.g., malaria, respiratory illness	Poor human health. Increased health costs and malnutrition
Infrastructure and settlements	Flood and landslide damage to transport and communication infrastructure and homes	Reduced water supply for hydroelectric generation	Damage to transport and communication infrastructures and increased cooling costs	Increased human and animal migration. Economic loss and growth volatility; reduced reliability of power supply

Source: Orindi and Eriksen 2005; Orindi and Murray 2005; Goulden 2008; Government of Uganda, Ministry of Water and Environment 2007)

Climatic conditions are expected to become unsuitable for coffee production (Uganda's main crop export) with an estimated loss of US $266 million in exports (Jassogne et al. 2013,

Mubiru et al. 2012, Läderach et al. 2011). On a positive note, areas of Uganda that will experience increased rainfall will open up lands for crop and cattle rearing. Unfortunately, this positive impact might be short lived, because increased precipitation has potential to bring heightened flood and landslide risks, increased soil erosion and crop damage and loss of human life and livestock. To address the challenges of climate change and variability, the Government of Uganda with the support of development partners (Governments of Denmark, United Kingdom and Germany) and a coalition of non-governmental organizations (NGOs) and community-based organization (CBOs) have been involved in addressing climate change issues, locally, nationally, regionally and globally. Specific initiatives include:

- Uganda's National Communications under the UNFCCC that comprise a national inventory of greenhouse gas emissions and an assessment of vulnerability and adaptation needs together with a set of recommendations,
- The National Adaptation Programmes of Action (2007) that did an analysis of climate related disasters, impacts and coping mechanisms at a community level,
- Establishment of parliamentary forum on climate change to address the environmental, social and economic pressures,
- Establishment of the Climate Change Unit (2009) within the Ministry of Water and Environment,
- The 5-year National Development Plan (2010-2015) that incorporated climate change with natural resources and environment, as one of ten critical sectors that will contribute to national development goals, and aims to redefine climate change as a development issue which targets research, awareness raising, capacity building and development.

On policy issues, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) East Africa program has been working with the Ministry of Water and Environment (MWE) and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) to mainstream climate change into national agriculture plans and agriculture into climate change policy. Uganda's climate change policy was drafted in 2012 with the overarching objective of ensuring that all sectors and stakeholders address climate change. The policy addresses both climate change adaptation and reducing greenhouse gas emissions (mitigation). Other initiatives at national level that Uganda has instituted include NAPAs, Parliamentary Forum on Climate Change, and the national development plan. CCAFS has

been instrumental in the process of moving forward the implementation of some of the activities outlined in the initiatives as well as assessment of policy for mitigating the impacts of climate change. Ampaire et al. (2015), for example, find that most of the policies use top-down approaches without considering the opinions of the local community who are most affected by the impacts of climate change. Furthermore, once the policies are drafted, there is a lack of a functional implementation structure.

CCAFS East Africa has also been involved in national adaptation planning with the Climate Change Unit, Ministry of Water and Environment (CCU-MWE) to prioritize agricultural measures which were identified in the NAPA (Mungai et al. 2014). Several consultative meetings were held to dialogue on the progress made on NAPA projects and how to upscale the NAPA pilot projects to all the districts of Uganda. It was during one of the consultative meetings that stakeholders recommended an assessment of the status of NAPA projects, including an inventory of climate change adaptation and mitigation agricultural projects and activities by various actors.

This study responds to the recommendation of documenting the status of NAPA projects in the four districts of Uganda, identifying the major activities for each of the projects, target beneficiaries and outcomes, including lessons learned and challenges arising from implementing the NAPA projects to inform integration of climate change in agriculture and food security policies. This study uses several methods. A review of reports and other published literature from a variety of sources on NAPA in Uganda was conducted. Specifically, a narrative literature review was used that summarized and synthesized information and conclusions drawn (Beecroft et al. 2006). The review provided a comprehensive background on current knowledge on NAPA projects, while highlighting the significance of the findings on future climate change policy in Uganda. A qualitative method was also used to collect information from personnel in various government departments, Sub-county officials and beneficiaries (Appendix I). Some of the people involved in implementation of NAPA projects were also interviewed.

1.2 Current and future climate change plans and policies in Uganda

Future climate projections for Uganda indicate an increase in near-surface temperature for the country in the order of 2°C in the next 50 years and a slight decrease in total annual rainfall (with slightly wetter conditions over the west and north-west and significant drops over Lake Victoria about -20% from present) (IPCC 2014). Therefore, Uganda has an obligation of ensuring its citizens adapt to climate change through appropriate measures, while promoting sustainable development at the same time. Uganda has made significant progress in terms of climate change policies, plans and actions. Some of the programs and policies that have included agriculture and climate change as one of the major actions include:

- National Policy for Disaster Preparedness and Management (2010);
- National Climate Change Policy and its implementation strategy (2013);
- Intended Nationally Determined Contribution (INDC) (2015);
- Agriculture sector National Adaptation Plan (2015);
- Comprehensive NAP, to be completed and ready for implementation by mid-2016;
- 10-year Climate Smart Agriculture Program (2015-2025);
- National Development Plans (2010/11 - 2014/15) has integrated climate change and agriculture; and
- Parliamentary Forum on Climate Change. Created in 2008, to promote awareness and action around the effects of climate change, and to ensure resilience through targeted capacity building efforts.

2. National Adaptation Programmes of Action

2.1 Overview of NAPA in Uganda

The Least Developed Countries (LDCs) and Small Island Developing States (SIDS) were recognized by the UNFCCC as the most vulnerable to adverse effects of climate change. UNFCCC thus initiated the development of National Adaptation Programmes of Action[1] (NAPA) as a platform for LDCs to identify and prioritize adaptation activities that respond to their needs to adapt to climate change. Uganda as one of the LDCs launched its NAPA process in 2007.

Through leadership of the Meteorology department[2], a climate change institutional framework was established to facilitate interactions and coordination between the different government departments on climate change issues and other stakeholders, including local authorities, civil society and vulnerable communities. The framework provided national drive for developing a cross-sectoral NAPA, where a participatory community based approach was used to identify priority intervention areas covering three ecological regions of rural Uganda— mountainous, lowland and semi-arid ecosystem. Nine priority activities were identified targeting forestry, agriculture, water resources, health, and weather and climate information (see Table 2). The implementation strategy for the priority activities used an integrated/ programmatic approach with communities and ecosystem adaptation as a strategy to build resilience of the most vulnerable communities of Uganda.

The development of Uganda's NAPA was done by three teams comprising of experts from Agriculture and Water Resources, Forestry and Wildlife and Health sectors. The objective of the pilot projects was to build communities resilient to adverse impacts of climate change. The team of experts identified nine priority projects that were linked to the country's development priorities under Uganda Vision 2040 (Government of Uganda 2013). The NAPA was submitted to UNFCCC in 2007 and implementation of the priority projects started in

[1] This was during the 7th Conference of the Parties (COP7) in Marrakech, Morocco.

[2] Meteorology department is the National Focal Point for Climate Change under the UNFCCC. It is located within the Ministry of Water and Environment.

2012[3] in four Districts representing three ecosystems (Figure 1). Implementation of the projects used a grass-root based programmatic/integrated approach.

Table 2. NAPA priority areas and amount of funds invested

Priority projects	Budget (USD in millions)
Community Tree Growing Project	5.5
Land Degradation Management Project	4.7
Strengthening Meteorological Services	6.5
Community Water and Sanitation Project	4.7
Water for Production Project	5.0
Drought Adaptation Project	3.0
Vectors, Pests and Disease Control Project	8.0
Indigenous Knowledge (IK) and Natural Resources Management	1.2
Climate Change and Development Planning Project	1.2
Total	39.8

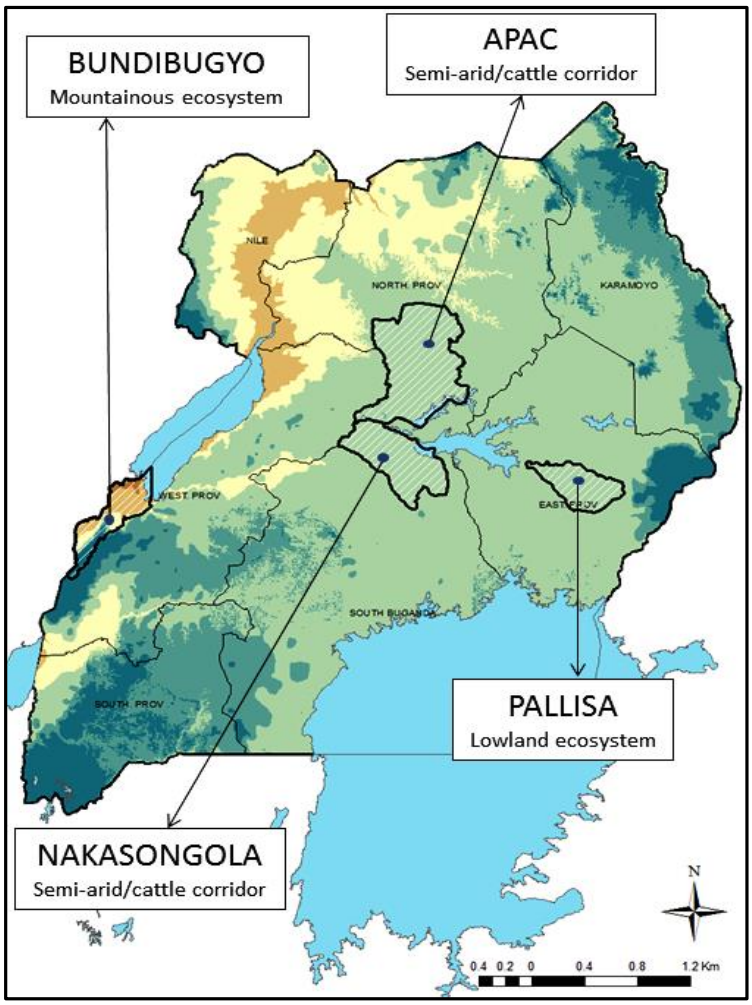
Source: Government of Uganda 2007.

A Participatory Rural Appraisal (PRA) approach was used to collect data and information from communities of selected districts and villages that met certain criteria[4] were selected as areas for implementing NAPA projects. These became known as NAPA villages. Implementation of the projects was done through collaborations amongst various civil society groups under the supervision and coordination of a multi-sectoral National Climate Change Steering Committee.

[3] Funding was provided by the Government of Denmark through the Royal Danish Embassy.

[4] The criteria used are not documented. A search in government offices did not yield any documents

Figure 1. Location of NAPA projects in the four e districts in Uganda



The NAPA projects were funded by DANIDA through the Climate Change Unit (CCU) at the MWE. Funds for Nakasongola and Bundibugyo districts were then sent to the District Local Government (DLG). Therefore, the DLG directly channeled the funds to a community account in Nakasongola while for Bundibugyo, funds went directly to the target beneficiaries. For Apac and Pallisa districts, funds from CCU were channeled through NGOs. The Agency for Sustainable Development (ASDI) in Apac district received the funds and implemented activities directly with the beneficiaries. In Pallisa district, funds were channeled to Development Network of Indigenous Voluntary Associations (DENIVA) who then engaged a local CBO called PACONET to implement the activities with target beneficiaries (see Appendix I).

"Uganda NAPA projects were designed and launched in 2007 with an objective of strengthening community adaptation to climate change. Preparation of NAPA was guided by the principle of participatory approach, drawing heavily on the views of the vulnerable communities and their knowledge on coping mechanisms. This approach raised the level of awareness on the changing climate and its impacts. It also increased expectations and participation levels of the vulnerable communities…" *Prof. Ephraim Kamuntu, Minister of Water and Environment*

2.2 Bundibugyo district - Mountainous ecosystem

Bundibugyo district is a steep mountainous landscape on the eastern sides of Ruwenzori Mountains. The land is intensely cropped with minimal soil erosion control and land stabilization measures. Thus, the district faces frequent landslides and mudslides, flooding on the valley bottoms and river overflows. The district is characterized by increasing population growth rates, heavy rains, increasing deforestation rates, landslides in hilly areas and flooding of the lowlands. Since 2000, farmers have reported increased water flows through the landscape that has led to rises in river levels, overflows and flooding. This is destroying livelihoods, human and livestock lives and homes and infrastructure (Kervyn et al. 2015).

NAPA activities were implemented in Harugale sub-county of Bundibugyo district by the MWE in collaboration with the district local government, the Africa Climate Resilience Alliance[5] (ACCRA) under the leadership of World Vision International and several CBOs. ACCRA provided technical expertise and financial assistance. The organizations established a District NAPA implementation steering committee and specific activities for Bundibugyo district included:

- Provision of weather information through radio;
- Agroforestry involving planting of 27,500 trees on 19.9 hectares and establishment of a locally managed tree seedling nursery for sustainable supply of seedlings;

[5] ACCRA is a multi- country project implemented by a consortium made up of Oxfam GB, the Overseas Development Institute, Save the Children International, CARE International and World Vision International.

- Construction of 688 soil and water conservation trenches and reinforcing the trenches by planning grass bands and agro forestry trees like *Calliandra calothyrsus;*
- Skills development through training and learning exchange visits for soil and water management;
- Construction of fuel energy saving stoves in 100 household for women; and
- Provision of 1000 kg of early maturity quality bean seed.

About 80 target beneficiaries were identified and included crop and livestock farmers. Of these, 40 were male and 20 were female crop farmers, while 15 were male and 5 female livestock farmers (Ministry of Finance, Planning and Economic Development 2012, ACCRA 2014). There were more men that were targeted compared to women due to the nature of the activities being implemented, apart from the improved energy stoves. According to the community living in Harugare sub-County of Bundibugyo district, it is the responsibility of men to care of the women. Furthermore, the activities demanded for strong abled people who can dig on the steep slopes.

Reviews of documents and findings from interviews with MWE staff suggest that farmers are actively engaged in NAPA activities and are demonstrating a positive change towards reducing vulnerability to climate risks on their farms and households. Some of the achievements include:

- Training of women on making of improved cook stoves and a total of 80 improved cook stoves were developed and sold;
- Formation of farmer associations (e.g. Bupomboli boundary management Association that has 18 women and 17 men) that are involved in various activities such as establishing and managing tree nurseries;
- Establishment of community woodlots across the landscape to reduce water runoffs and stabilize soil;
- Tree planting across the sub-county. About 2500 *Calliandra calothyrsys* (fodder), 14,000 *Pinus Patula*, 8000 *Pinus Caribea* and 3000 *Eucalyptus Grandis*, (all for timber), 200 grafted variety of fruit trees and Arabica coffee. In total, it is estimated that the planted trees covered an area of 14 ha on farm boundaries, terraces and woodlots;
- Farmers participated in an exchange visit to a similar district—Kabale district in South Western Uganda—where they learned about soil and water management on hilly landscapes. A total of 20 farmers participated of which 7 were women and 13 were men; and
- Involvement of school children in activities such as tree nurseries.

"My husband and I received drought resistant bean seeds and we are still enjoying the excellent seed we received. I was given 3 kilograms of beans, planted all of it and harvested 50 kilograms. What compelled us to join the project is that we first received training and the project implementers asked us about our problems. It gave us the spirit to embrace the activities that the project was implementing and we have continued planting improved bean seeds…" *Miriam Nansereko, farmer and beneficiary*

To ensure sustainability and continuity of the activities after the end of NAPA project, the sub county passed bylaws on tree planning. The farmer led-association is also commercializing the tree nurseries to sell tree seedlings to other farmers. The income generated from the sale of seedlings will maintain the nurseries and pay the workers. There is market demand for cook stoves in other sub-counties of Bundibugyo district and women are encouraged to produce more stoves that they can sell for income. Finally, the local government of Bundibugyo districts plans on integrating climate change in the district development planning process.

2.3 Pallisa district- Lowland ecosystem

Pallisa District is located in Eastern Uganda (Figure 1). Due to its low elevation and flat landscape, about 403.9 Km^2 of land is occupied by water bodies and swamps. The rest is occupied by a population of 520,532 people, with a population density of 228.7 persons per square kilometer). More than 90% of the population is engaged in agricultural related activities. Cotton is widely grown as a cash crop and food crops include rice, soya beans, millet, maize, sorghum and cassava. Very few farmers own livestock. Pallisa district is prone to food and fodder scarcity, prolonged dry spells and water shortage for human and livestock.

NAPA activities in Pallisa were implemented in Gogonyo sub-county by the MWE in collaboration with local district government, the Development Network of Indigenous Voluntary Associations (DENIVA) and PAKOLETA, a CBO. Main areas of focus include

prevention of soil degradation, pests and disease management and drought management. Specific activities implemented included:

- Improved varieties of cassava, ground nuts, maize, and vegetables;
- Agroforestry involving community tree planting of fruit and medicinal species such as mangoes, pawpaws, oranges, *Azadirachta Indica* (neem) and *Moringa oleifera*;
- Provision of water tanks for rainwater harvesting and construction of a well; and
- Training of community on climate change adaptation strategies through exposure visits, drama group, workshops, and radio programmes.

Women were the main beneficiaries in Pallisa district. The total number of target farmers were 70, out of which 50 were women and 20 were men. Some of the achievements include:

- Construction of five water tanks with capacities of 10,000 and 15,000 litres for households with iron-roofed houses for water harvesting. The community contributed bricks and labor, and households living nearby continue to use the tanks especially during dry season. Shallow wells were also constructed for water harvesting, and are still used to date for domestic purposes and livestock;
- Women started small-scale irrigation for kitchen gardening using water from the water tanks and shallow wells. However, the women have stopped using this technology due to its intensive labor requirements;
- Farmer exchange visits to other regions facing similar climate change challenges, with adopting some of the technologies they learned such as shallow wells;
- Increased use of energy saving stoves amongst women, reducing the time and number of days spent collecting firewood from two times a week to once in a month. The women were able to save time and work on their gardens;
- Agroforestry, where fruit trees planted for various uses (fruits, timber, firewood and income) have increased. Planting of Acacia trees also increased because it matures very fast and provides excellent firewood; and
- Some of the farmers are using waters from Lake Kyoga to irrigate their fields. Farmers bought water pumps that they use for pumping water to vegetables fields. The pumps are no longer in use. An irrigation system was bought but not set up.

"During assessment of NAPA activities in Pallisa district, we found that farmers dug shallow wells after the field exchange. Many farmers are already using these wells for domestic purposes and livestock production..." *MWE staff.*

2.4 Nakasongola district – Semi-arid ecosystem

Nakasongola district is prone to high temperatures and prolonged dry spells, leading to frequent crop failure and water shortages. The district has had high deforestation rates, with livestock keeping as the main livelihood activity. NAPA interventions focused on reducing food insecurity through drought management. The NAPA project in Nakasongola was implemented by Agency for Sustainable Development Initiative (ASDI) in Akokoro sub-county and by district local government in Ndaiga-Lwabiyata sub-county and Kyangogolo-Nabiswera sub-county. Being a semi-arid ecosystem, water is a critical resource in the district. Therefore, the most important activity according to the community was construction of valley tanks. This reduced the distance that livestock travelled during the dry season.

> "The future of Uganda's economy depends on how we manage the changing climate. The current situation that Uganda finds itself in can compare to a plane taking off on the runway. For example, in Aracha area, the place gets flooded and farmers cannot get their farm produce to the market…" *Team leader, ASDI NAPA project.*

The project targeted subsistence farmers, pastoralists and agro-pastoralists. Review of reports does not indicate the exact number of targeted beneficiaries. However, direct communication with CCU staff indicates that about half the beneficiaries were women and the youth. Activities implemented included:

- Water harvesting involving construction of household water tanks and valley tank) for irrigation, livestock and domestic use, and installation of a community drip irrigation scheme;
- Provision of drought resistant crop seeds and agro-inputs;
- Provision of fruit tree seedlings e.g., oranges and mangoes;
- Provision of a pair of oxen and ox-ploughs, and other livestock pigs and goat; and
- Training, skills and knowledge development of community in record keeping, group dynamics, procurement, agronomy, enterprise selection, agriculture, livestock feeding and management.

"Farmers in Nakasongola District were not rearing pigs. However, pigs were quickly accepted within the community because of its fast maturity and high rate of delivery. Pigs were sold at the market for household income during the dry season…" *CCU staff*

Some of the key achievements include:

- Construction of one valley dam for water harvesting for livestock, domestic and irrigation use. This greatly reduced the distance travelled for water for both domestic and livestock. Also, farmers were able to irrigate their vegetable fields during dry season, and the community is still using the dam;
- One drip irrigation system was set up on a demonstration farm. Irrigation water was drawn from Lake Kyoga. Farmers irrigated their tomatoes and cabbages fields. However, the irrigation system was effective during the project period and broke down six months later;
- About 12 goats and 10 pigs were distributed and 2 oxen bought. The concept of passing on the gift was introduced especially for the goats and pigs. However, the community stopped passing on the kids and piglets after two years;
- Tree planting especially fruit trees by women.
- Drought tolerant beans and maize seed were distributed, with the amount of seed distributed depending on the size of land that the farmer prepared that season. Most of the farmers are not purchasing the drought tolerant beans and maize seed.
- Despite the community being given the opportunity to design and implement the project, sustainability of the activities was not considered. Currently, most farmers are only rearing the livestock they were given but the irrigation system has collapsed.

"When the project started, I was given two pigs. They conceived and one got seven piglets and the other got six piglets. I passed on two piglets to my neighbors, I also sold some pigs and invested in my children's house…" *Fred Ssebina, farmer and beneficiary*.

2.5 Apac district – Arid ecosystem

Apac district experiences frequent and prolonged dry spells, with a high rate of deforestation. Due to the aridity of the land, NAPA project focused on provision of clean drinking water, improved sanitation and prevention of deforestation. The project was implemented by

Ugandan government in partnership with a local NGO (ASDI). Selection of activities for implementation was through a consultative process involving the district officials, NGOs and other stakeholders under the umbrella of Apac District Climate Change Action Forum. To ensure that funds were managed appropriately, the Apac Anti-Corruption Coalition coordinated the implementation of the projects. Akokol sub-county was selected in Apac district due to its harsh arid weather conditions, high rate of land degradation due to harvesting of firewood to smoke fish, worsening sanitation conditions, increasing population and high poverty levels. Activities implemented included:

- Use of briquette making technology to reduce dependence on wood for cooking, and establishment of a woodlot for demonstration; and
- Construction of a water purification plant for safe drinking water, including health, hygiene and sanitation campaign.

"In Apac district, communities understood the weather seasons. However, in recent years, the timing of seasons is shifting, weather patterns are becoming difficult to predict and weather events are heavier than usual. This has made societies still dependent on traditional practices very vulnerable, affecting their food security and their lives. Unfortunately, this district has one of the fastest growing population that is putting a strain on the natural resources...." *Prof. Ephraim Kamuntu, Minister of Water and Environment*

There was a desperate effort during implementation to take into consideration gender issues. For instance, the water purification plant was most likely to benefit women and girl children since they are the most affected by scarcity of safe domestic water. However, the water purification system was never completed. Some of the achievements included:

- Individual farmers and groups planted 37,000 traditional and exotic trees. Some of the seedlings died but the ones that survived are still growing;
- Demonstrations on energy saving stoves was done and some of the households bought the stoves at discounted prices;
- About 12 community campaigns were held through village meetings and radio in local language; and
- The biogas plant is incomplete but there are plans by the Biogas Electricity project of ASDI (with financial support from the Royal DANISH embassy the World Bank) to complete the construction.

"The water purification house has been constructed and what is now pending is building the platform on which the overall equipment will be mounted and the water purification plant will be powered by the biogas plant, which is adjacent to the plant…" *Team leader, ASDI NAPA project*

3. National climate change projects related with NAPA strategic interventions

Several projects have been developed and implemented based upon the NAPA strategic interventions for improving resilience of rural communities. These projects identified one priority action and were implemented in conjunction with partners, including UNDP and FAO. The projects built on the participatory processes established by NAPA to incorporate climate resilience into the agricultural sector, enhancing food security and reducing climate risks among smallholder farmers.

Strengthening Climate Information and Early Warning Systems in Uganda to support Climate Resilient Development and Adaptation to Climate Change

Started in 2012, this project responds to priorities and actions identified in the NAPA document that articulates the need for securing, transferring and installing critical technologies, as well as developing the necessary systems for climate change-related information for improving decision-making processes (UNDP 2013). The project aims to increase the capacity of the national early warning network to warn and rapidly respond to extreme climate events. Outcomes of the project included i) Increased capacity to monitor extreme weather and climate change enhanced; and ii) Hydro-meteorological and environmental information for making early warnings and long-term development plans efficiently and effectively used. The project is being implemented by the government, UNDP and Global Environment Facility (UNDP 2013).

Resilience Building through Banana Value Addition in Uganda

The diets of communities living in Western and Southwestern regions of Uganda rely on bananas, beans and maize. All these crops are at risk from changing climate. This project was designed to enhance resilience of vulnerable communities and improve their capacity to adapt

climate change through banana value addition activities. The goal of the project is to reduce vulnerability to climate change, increase income generation, employment opportunities and food security (UNIDO 2014). This project is being implemented jointly by government, Global Environmental Facility, Agro-Genetic Technologies Ltd Uganda and UNIDO) at a cost of USD 10.9 million.

Global Climate Change Alliance - Strengthening the Resilience of Rural Populations

Initiated in July 2012, the project has two main objectives: i) strengthening the resilience of rural populations and agricultural production systems in the central part of the cattle corridor (more specifically, the districts of Nakasongola, Nakaseke, Luweero, Kiboga, Mubende and Sembabule) which are particularly vulnerable to drought and climate variability, and ii) building the capacities of communities, commercial farmers and the Government of Uganda to cope with climate change. The project is implemented by MWE, Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and FAO. Outcomes of the project included strengthening knowledge and capacities for climate change adaptation, better access to water for livestock through 'water for production' investments, and more climate-resilient agricultural production systems in the cattle corridor (GCCA 2011).

Down to Earth: Territorial Approach to Climate Change (TACC)

The project aims to foster climate friendly development in three districts—Mbale, Manafwa and Bududa—that are highly vulnerable to torrential rains and mudslides. The project is implemented by the district local governments in partnership with UNDP. The project provides methodologies and tools for long-term climate change participatory planning, technical support for the preparation of regional climate change plans, including identification of priority mitigation and adaptation measures and identify policy and financing instruments to implement priority climate change measures (UNDP 2015). This project is on-going and some achievements include:

- Reviewing Uganda's policy developments in climate change from a national perspective;
- Awareness raising and capacity building workshops for Uganda policy makers to take climate action;
- Compiling good practices and existing information on climate change impacts and integrated policies in relevant sectors;

- Planting of 1,000ha of land with *Grevillea robusta* and *Maesopsis eminii*, and another 2,000ha of land planted with mixed Native woodlots of *Prunus Africana*, Grevillea, Mahogany, Croton, Premna, Ficus, Albizia, and Cordia on hilly slopes; and
- 3,500ha of land alley planted with Albizia spp, Grevillea and Cordia spp to reduce run-off, act as wind breaks, enhance improvement in agricultural yields by increasing soil fertility.

4. Challenges and lessons learned implementing NAPA

Several challenges were encountered while implementing the NAPA projects, based on interviews with the staff from the CCU:

- Not all the funds allocated to each of the districts were disbursed to the implementing agency, leading to some activities not being implemented or completed;
- Coordination of the NAPA projects (especially financial management) proved a challenge due to different agencies involved at different levels. From national to district level, to sub-county and finally to village level with various actors along the way proved a very tedious process. Due to poor coordination, release of activity funds was delayed as well;
- Implementing some activities such as tree planting was hampered by prolonged dry spells that killed most of the seedlings. In Apac district, for example, most of the seedlings planted died because they were planted during the dry season and farmers did not have knowledge on irrigation, lacked training on tree nursery management. The water purification and biogas project were also not completed due to lack of finance;
- The NAPA projects were implemented for one year, a short period not sufficient to build farmers adaptive capacity and resilience to climate change;
- Lack of weather synoptic stations and equipment. The local government plans on contacting the department of Meteorology and other supportive organizations to collect, analyze and share weather information to farmers;
- Poor or inappropriate weather information dissemination channels thus farmers did not receive weather information to enable them make decisions or prepare for disasters; and

- In Pallisa district, sub-county government reported resistance and non-cooperation from local people, as community members were unwilling to contribution of bricks as requested by implementers.

"Weather disrupted implementation of all project activities across the four Districts. There were incidences of floods and dry spells that affected tree planting activities…" *Head, Climate Change Unit* (CCU)

Lessons learned

The government established an institutional framework—the Climate Change Unit (CCU) under the MWE—that provided an impetus for developing a cross-sectoral NAPA programme. The CCU facilitated interactions on climate change issues between the government and other stakeholders, including local authorities, civil society and vulnerable communities especially during the vulnerability assessment process. CCU also serves as Secretariat for UNFCCC Designated National Authority. The NAPA implementation process was highly participatory with different stakeholders at various levels including policy makers, Members of Parliament, Local Governments, CSOs, NGOs and the local communities. The lessons learned from the NAPA projects are expected to inform policy and strategy as well as leverage additional resources to scale up successful initiatives.

"During the whole process of NAPA development through to implementation, the capacity of government personnel and communities were enhanced. The numerous training and awareness opportunities among farmers, district-level focal persons and national government ministries was crucial in the success of the NAPA projects…" *Head of CCU.*

Other lesson learned include:

- Implementation of NAPA priority activities had to be integrated for a holistic approach. The holistic approach adopted allowed all stakeholders to assess the interdependencies between different issues (within each economic sectors) that farmers face;
- Greater involvement of the community right from vulnerability assessment is essential for success of adaptation strategies, and the community can also contribute their own funds and labor if they are involved;

- Capacity building for community to manage and implement the activities will take time and requires a lot of patience and commitment. By building the capacity of the community, farmers will have the skills and knowledge to managing funds and activities. Capacity building is also necessary for local and national government staff to enable them implement, monitor and evaluate projects with a gender lens;
- Awareness-raising of climate change, its effects and impacts on communities is essential. Several NAPA activities involved awareness campaigns from radio announcements to entertaining performances in the villages;
- Farmers learn very quickly after exposure visits to observe other adaptation measures and initiatives undertaken by other farmers. Practical learning is more effective for farmers;
- Collaborations amongst various organizations are very important. Involvement of the local government is important for effective planning and budgeting for local adaptation initiatives; and
- Community livelihoods are multifaceted and hence one activity is not sufficient to build adaptive capacity. Therefore, local government should promote multiple diverse inventions that address climate change that will increase community resilience to adverse impacts.

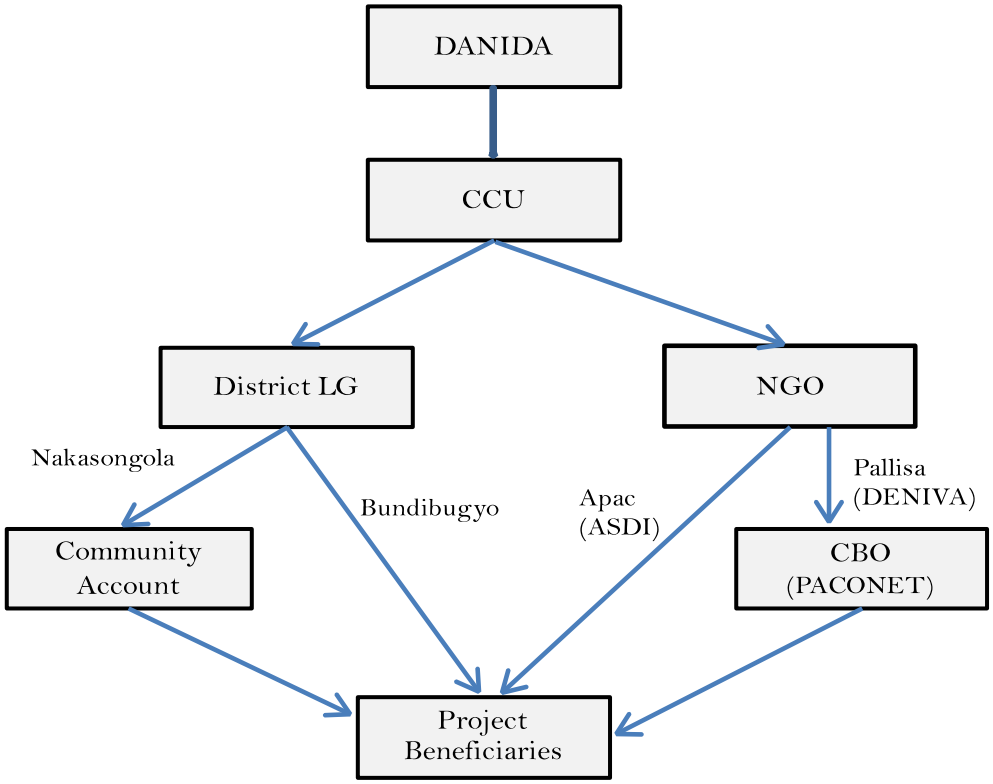
"Community ownership is an essential component of development intervention. In Bundibugyo District, most of the activities were implemented directly by community groups. This enhanced ownership during the duration of the project..." *Head of CCU*

5. Conclusion

The current capability of Uganda to adapt to climate change might be limited due to the approach that the government is taking to implement adaptation measures. The difficulties of implementing projects is evidenced with the NAPA projects and therefore there is demand for action and radical thinking about how best to overcome the formidable challenges which climate change adaptation poses. To stimulate thinking on these opportunities the review makes a few recommendations. First, NAPA projects were implemented for one year and emerging reports indicate that farmers adopted some of the activities. Therefore, there is need to conduct an extensive impact assessment study to document successful adaptation activities that farmers have adopted, the challenges they face, as well as opportunities for scaling up to more farmers in other sub-counties and districts. Second, there is need for supporting implementation of long-term initiatives with sustainability strategies rather than one-off projects, since these tend to be insufficient and fail to address long term climate change challenges. Third, lessons learned from NAPA implementation needs to be documented with various government departments, local governments, relevant NGOs and CBOs and other countries in East Africa. Government officials from Mozambique and Ethiopia toured NAPA activities in Bundibugyo district. Therefore, the NAPA implementing districts can serve as adaptation learning sites for farmers, government officials from other countries and other interested stakeholders. Finally, experiences from the NAPA implementation process can be used to develop local adaptation plans of action (LAPAs) with local community. Furthermore, lessons learned from NAPA activities and the implementation process should be used to re-visit existing policies.

Appendix

Appendix I: Flow of funds for NAPA pilot projects



Source: ACCRA 2014

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