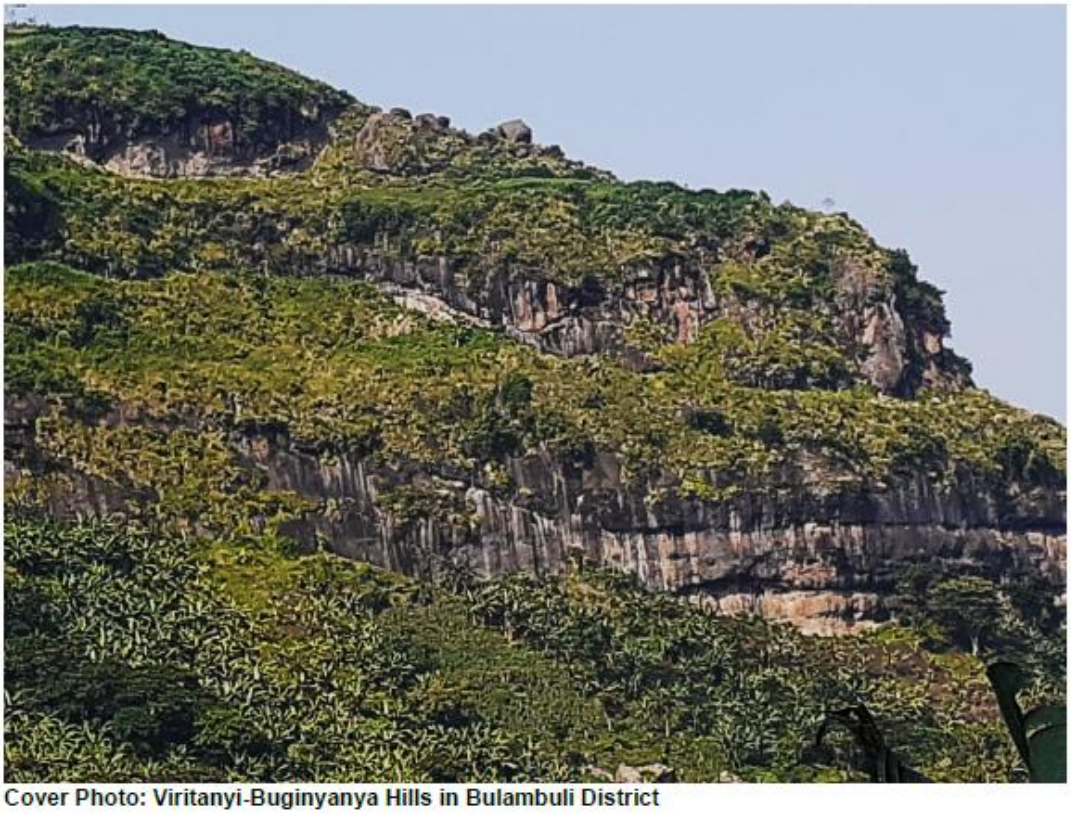
RETROSPECTIVE IMPACT EVALUATION FOR MBALE TREE PLANTING PROGRAMME 2010-2020



Cover Photo: Viritanyi-Buginyanya Hills in Bulambuli District

By [redacted]

and [redacted]

13th September 2020

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List of Abbreviations and Acronyms

ACCESS	African Collaborative Centre for Earth System Science
AO	Agriculture Officer
BRDC	Bungokho Rural Development Centre
CBO	Community Based Organization
CSO	Civil Society Organization
DEO	District Environmental Officer
DFO	District Forest Officer
EBA	Ecosystem Based Adaptation
ECO-Trust	The Environmental Conservation Trust in Uganda
ENR	Environmental Natural Resources
FGD	Focus Group Discussions
HRNS	Hanns R. Neumann Stiftung
ICIPE	International Centre for Insect physiology and Ecology
ICRAF	World Agroforestry Centre
IEC	Information, Education and Communication
IPs	Implementing Partners
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
KMFG	Kolonyi Mixed Farmers Group
LC	Local Council
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
M - CAP	Mbale Coalition Against Poverty
MEACCE	Mount Elgon Agroforestry Communities Cooperative Enterprise
METGE	Mount Elgon Tree Growing Enterprise
MTPP	Mbale Tree Planting Programme
MWE	Ministry of Water and Environment
NaFORRI	National Forestry Resources Research Institute
OWC	Operation Wealth Creation
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RFCC	Resilience Framework to Support Climate Change
SAB	Salem Brotherhood
SAO	Share an Opportunity
SBKG	Sunu Bee Keepers Group
TACC	Territorial Approach to Climate Change
TNBO	Tree Nursery Bed Operator
ToC	Theory of Change
TRC	Tree Resource Centre
UBOS	Uganda Bureau of Statistics
UCDA	Uganda Coffee Development Authority
UNDP	United Nations Development Programme
UNDP/GEF	UNDP/ Global Environmental Finance
VCM	Voluntary Carbon Market

Executive summary

Mbale Tree Planting Programme (MTPP) which started in 2010 is Size of Wales' flagship tree planting programme linked to Welsh Government's *Plant!* Scheme. Its overall aim is to increase community resilience in relation to impacts of climate change in Mount Elgon sub-region through adaptation and mitigation interventions. The management of the programme is vested in Mount Elgon Tree Growing Enterprise LTD (METGE) while implementation is done in partnership with Bungokho Rural Development Centre (BRDC); Mount Elgon Agroforestry Communities Cooperative Enterprise (MEACCE); Salem Brotherhood (SAB) and Share an Opportunity (SAO). The programme employs a total 101 persons of whom 15.8% are women. By the end of 2019, 10 million tree seedlings of 80% indigenous and 20% naturalized exotic species had been given to beneficiaries for planting

Methodology

This report emerges from a retrospective impact evaluation that was conducted between 27th July and 14th September 2020. The evaluation employed both qualitative and quantitative primary data collection methods for 292 respondents of whom 56.4% were males and 43.6% females. Further, literature review, physical visits and observations were made at household level and programme sites to corroborate the information gathered from the interviews.

Findings

At global level, MTPP contributes towards **Sustainable Development Goals** (SDGs) of: Addressing Climate Action (SDG 13); Affordable Clean Energy (SDG 7); and No Poverty (SDG 1).
At national level, the relevance of the MTTP is evident in the following ways: (i) it fits within the **Uganda Forestry Policy 2001** that recognizes the importance of development and sustainable management of forests on private land, in gazetted areas, within urban areas for the provision of goods and services. (ii) MTPP contributes towards the National Forest Plan 2013 objective 1 that aims at increasing economic productivity and employment through forest production, processing and service industries and objective 2 of raising incomes for households through forest-based initiatives. (iii) MTTP addresses the Sector Plan Core Programme 2 which is promotion and intensification of tree growing on farm. (iv) MTTP contributes to the Forest Sector Support Department's on-going campaign #10MillionTrees planting (Help to Restore Uganda's Lost Forest Cover) and also (v) contributes to the National Climate Smart Agriculture Programme implemented by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). Finally the MTPP contributes to the National Forest Policy 2001 statement No 2.

Food security and diversity: 89.7% of respondents confirmed increase in food security as a result of MTPP. Food diversification was evident due to availability of fruits from the fruit trees that were planted, banana growing and adoption of zero grazing of livestock. In addition, the programme has enabled constant availability of fuelwood, a critical enabler for food security. Food security is about, availability, accessibility, affordability and utilization. People cannot be food secure if they are energy insecure. The availability of firewood therefore, is a positive element that the MTPP **MUST** be credited for.

Disasters and risk mitigation: There is evidence of tree planting on slopes for soil stabilization, reducing landslides, reducing the negative impacts of hailstorms on coffee production, reducing effects of strong winds and storms on houses and schools. Bumasikye, Watsemba, Kolony and Nakaloke primary schools used to experience strong winds and storms that would carry away the roofs of buildings. Currently the presence of wind breakers has mitigated such risks. This contributes to the safety of the pupils and teachers.

There is ***a positive contribution to culture*** through tree planting: One of the tree species promoted by the programme is the *Markhamia lutea*, a tree of cultural significance to the Bamasaaba (people who occupy the Mount Elgon sub-region). The *Markhamia lutea* is used during the traditional rituals of male circumcision and burial ceremonies. Medical male circumcision has been found to have medical benefits and is currently promoted by the Uganda Aids Commission under the Ministry of Health. However, the Bamasaaba conduct male circumcision traditionally.

Increase ***in forest cover***: The programme contributed to planting trees that are evident in farmer's gardens, road sides, schools and individual wood lots. This has increased forest cover in the region.

Based upon the consultants' observations MTTP was successful in influencing the adoption of tree planting that was seen during the transect walks. The survival rate of the trees after ten years is estimated at 57.2%. This means that currently there are about 5,720,000 trees out of the 10 million trees seedlings that were picked from the nurseries. This survival rate could have been higher if it was not for the low survival rate in schools such as Magoma P.S because of free range grazing of livestock and termites in Watzemba that destroyed *Grivellia spp*. Notwithstanding, this survival **rate is positive based on the experience of the consultants with other tree planting projects.** For example, CARE International in Uganda and Joint Effort to Save the Environment implemented a tree planting project around Itwara Central Forest Reserve that has similar weather conditions as the Mount Elgon sub-region. The survival rate was 51%. The final result of tree survival rate for the MTPP shall be validated after the completion of the inventory of the tree planted through Geo referencing.

Practising climate smart agriculture by farmers: The evaluation established that beneficiaries have good understanding of agroforestry as promoted by MTTP. Respondents were / are able to articulate the results chain and benefits from the programme. Only 7.6% of the respondents said that they had limited knowledge about tree planting. It was also evident that capacity for tree nursery establishment has been built for tree nursery bed operators, their households and community members. In addition, there is increased understanding of the benefits of trees and the importance of sustainable environmental management. Practising climate smart agriculture has led to increased crop yields among 84.3% of respondents. Specifically, coffee productivity has increased by 150%. In addition, i***ncrease in household incomes*** was reported by 70.3% of the respondents. This is majorly a result of increased crop yields due to improved soil fertility and increased sale of tree products. The number of beneficiaries involved in sale of timber, poles and firewood, medicinal tree products and organic pesticide has increased from 2.3% to 28.3% see figure 1. Additional information showed that the incomes from forest related activities of 70.3% of respondents had greatly increased as seen in figure 4. The increase in household incomes has led to improved living conditions.

***Introduction of clean cooking technology and energy saving stoves*:** The use of Lorena fuel saving stoves is at 35.8%, while the use of the unimproved charcoal stove is 29.5% and other types of cooking methods account for 34.7%. The consultants established that some households are using the Lorena Stoves exclusively especially in Namatsale and some parts of Bunanimi. In Nakaloke most households have their kitchens installed with the Lorena Stoves. However, consistence in use is very low.

Lack of harmonised approaches to address gender needs: Traditionally, women in this sub-region like elsewhere in Africa, are involved in care work at home. Women are responsible for all domestic chores including collection of firewood. Access to firewood near homesteads results in time efficiency. The saved time is used by women to engage in other income generating activities. However, there was limited understanding of gender transformation and lack of a gender strategy to guide all the programme partners.

Best Practises: ***Planting shade trees in coffee plantations*** that protects coffee from hailstorms, enhances weight of the coffee berries, improves coffee quality and increases productivity by 150%.

Promoting different indigenous tree species builds on indigenous knowledge and understanding of the uses of different trees by the beneficiaries. This was backed by the deliberate attempt of nursery operators to raise species based on community needs and preference.

Promotion of Agro forestry: The average size of land holding in the region is about 2 acres. This makes it unattainable for the households to establish woodlots. Indeed, 58.9% of the respondents pointed out that they have planted a few trees because they have limited land. By practicing intercropping, beneficiaries were able to plant trees. This was further enhanced by the improved crop yields that goes along with agroforestry.

Planting trees in schools was a multifaceted approach. It enabled the young generation to understand the importance of trees, environment management and climate change issues. This knowledge cascaded from the pupils to respective members of their households. The trees provide shade for relaxation and create extra space for teaching pupils. The fruits from the trees contribute to the nutritional status of pupils while the wind breakers offer protection to pupils, teachers and building structures.

Challenges include: **(i)** Inconsistent use of the fuel saving cooking technology and a low budget allocation of 1% which does not permit intense sensitization of communities. **(ii)** There is a lot of dependence on the Lorena Stove constructor to construct and make minor repairs which is not a good indicator for ownership. **(iii)** High staff turnover within the managing organization and implementing partners, resulting into loss of institution memory. **(iv)**There is lack of capacity in promoting the bee keeping enterprise.

Lessons Learnt: (i) Sustained engagement of the programme with a defined focus facilitated continuity of the programme benefits. (ii) Promotion of interventions that fit within the culture of the beneficiaries and builds upon indigenous knowledge facilitated adoption. The realization of short term benefits such as diversified livelihoods enhanced uptake of the interventions.

Conclusion: From the triangulated findings and the experience of the consultants, the MTPP was largely a successful programme. Three success areas stand out: promotion of agroforestry to increase soil fertility and crop yields leading to increased incomes and food security; planting of trees for fuel wood that is a critical need for households and supports food security and greening the region to combat climate change and reduce natural disasters. The programme such as this is even more relevant currently given that Mbale District was accorded City Status on 1st July 2020. This requires stakeholders working on climate action to step-up their efforts both in programming and advocacy. In fact the upcoming Mbale Tree Planting Programme could consider working with stakeholders to champion the concept of **Resilient Cities** where by the programme advocates for a city that is Clean and Greener.

Recommendations for the forthcoming 25:25 programme include:
(a) Nurturing strategic linkages with other climate action players focusing on livelihoods and climate change in the sub -region such as: ECO-TRUST for Voluntary Carbon Market (VCM) and Tree Resource Centre (TRC) for building the capacity of beneficiaries in seed collection and subsequently buying seeds from the accredited tree farmers.

(b) Development of materials and documents. With support from Size of Wales, MTPP should develop the following: **(i)** IEC materials on the benefits of using Lorena Stove; **(ii)** Uses of the tree species promoted by the programme; **(iii)** Tree planting and management guidelines; (iv) METGE Organisational Strategic Plan and (v) Gender Transformative Strategy for the programme. This should be coupled with training in Gender mainstreaming for all staff of Implementing Partners to engender the planning and implementation of interventions. This would enhance fairer gender relations and help to overcome the leakages at household level in the coffee value chain. All IEC materials should be translated in Lumasaaba language.

(c) METGE should explore membership with the Environment and Natural Resources CSO Network that provided a platform for learning; participation in the annual Joint Sector Review Process under the Ministry of Water and Environment (MWE); amplifies advocacy issues from the districts to national level and ensures that the contribution of CSOs is captured in the MWE annual reports. In addition, IPs can participate in sub-county and district council technical planning committees for increased visibility.

(d) There is need to explore a business approach to the Lorena Stove promotion, whereby constructors become entrepreneurs and charge a fee to beneficiaries. This will enhance ownership. However, special consideration should be made for households of persons with disability, the poor and marginalized.

(e) Scale up the institutional tree planting programme and widen the scope to cover health centres.

(f) Activities for slope stabilization and river bank protection should be prioritized for the fragile ecosystem of Bududa, Bulambuli and parts of Mbale that frequently experience landslides and floods. This needs to explore linking tree planting activities from the paradigm of Disaster Risk Reduction.

(g) Explore integrating the key concepts of resilient cities. Mbale was declared a city effective 1st July 2020. To ensure that physical planning does not undo the gains made over time, METGE should engage with stakeholders for a clean and greener city.

1.0 INTRODUCTION

Mbale Tree Planting Programme (MTPP) is Size of Wales' flagship tree planting programme. "Size of Wales" is a Welsh Charity whose focus is mainly to mitigate deforestation. MTPP is linked to Welsh Government's *Plant!* Scheme which celebrates the birth of every child born or adopted in Wales by planting two trees. Since its establishment, Size of Wales has: (i) Helped to sustain over 4 million hectares of tropical forest (twice the size of Wales); (ii) Provided over £3 million of grant funding to forest protection projects; (iii) Leveraged nearly £2 million of additional funding for forests through its match funding offer; (iv) Planted over 11 million trees; (v) Directly engaged 120,000 young people across Wales through educational workshops, assemblies and events; (vi) Held eight annual Go Green Days, engaging thousands of people across Wales and (vii) Engaged hundreds of thousands more people through its awareness raising and fundraising activities.

The MTPP commenced in 2010 with the overall aim of increasing community resilience in relation to climate change impacts in the Mount Elgon Region of Uganda through adaptation and mitigation interventions. Addressing the adverse effects of deforestation, over-cultivation, soil erosion and landslides was done through increasing knowledge and understanding of climate change. It was hoped that this would bring about attitudinal and cultural change in relation to tree planting and conservation of the environment.

The initial goal of the programme was to plant 10 million trees and the specific objectives of the were: (i) To contribute to the improvement and protection of crop yields and thus food security, leading to more sustainable livelihoods; (ii) To help communities in the region develop capacity to adapt to climate change; (iii) To assist with climate change mitigation by reducing reliance on wood and charcoal as fuels especially in cooking stoves, as well as exploring opportunities for sequestering carbon and the use of Voluntary Carbon Market to bring additional income to farmers.

1.2 Programme Management and Implementation

From the year 2010, the overall management of the programme was with Mbale Coalition Against Poverty (M-CAP) that was replaced by Mount Elgon Tree Growing Enterprise LTD (METGE) in 2017. Four partners: Bunghokho Rural Development Centre (BRDC); Mount Elgon Agroforestry Communities Cooperative Enterprise (MEACCE) formerly known as Gumutindo; Salem Brotherhood (SAB) and Share an Opportunity (SAO) are responsible for implementation. They ensure availability of tree seedlings of different purposes for distribution to beneficiaries; conduct awareness raising on the importance of trees and risks associated with deforestation; train beneficiaries in tree planting and management practices to mitigate environmental risks and promote livelihood opportunities that are integrated with the trees.

1.3 Purpose of the retrospective impact evaluation

- Support accountability to the Welsh Government.
- Support future fundraising efforts of Size of Wales through facilitating effective communication of the programme outcomes in light of the growing public and corporate interest in countering climate change and improving livelihoods of people most vulnerable to climate change.
- Validate planned outcomes to inform the future work of programme partners and provide baseline data for the forthcoming five-year programme.

1.4 Specific study objectives

- To identify and assess the impact that the tree planting programme has had on the farmers and communities in Mount Elgon sub- region and the extent to which these impacts are sustainable.
- To collect evidence and present it in a form that will enable Size of Wales and Welsh Government to share with external audiences.
- To collect evidence and data that can be used as baseline information against which programme progress will be measured over the next 5 years.
- Make evidence-based recommendations to support the new phase of the next programme (25:25).

2.0: EVALUATION METHODOLOGY

This assignment legally started on 28th July 2020 and was expected to end on 14th September 2020. During this time, the consulting team (1 team leader, an associate consultant and 6 research assistants) were expected to have concluded all the three phases of the assignment. Phase one was for research planning, phase two was field research and the final phase was data analysis and report writing.
A few guiding documents were made available to the team because the MTPP did not have a lot of documentation. There was no Theory of Change (ToC) or Log Frame for the programme under evaluation. However, the consultants were availed with the ToC and Log-frame that are currently being developed for the forthcoming programme. These were very helpful given that one of the objectives of the evaluation was to come up with baseline data for the upcoming programme 25:25.
Notable among the documents was the Size of Wales Safeguarding Policy (2019) to which all the evaluation team members had to comply with.

2.1 Sampling

Sampling was both probability and non-probability. The non-probability sampling was purposively used to select the districts, nurseries, schools, case studies and focus groups of beneficiary farmers. The rationale behind using purposive sampling was to ensure that the evaluation is conducted amongst beneficiaries who have been with the programme long enough to realise outcomes and benefits. In light of this, nurseries that started operating during the period 2010- 2012 and their respective beneficiaries were sampled. This criterion eliminated Sironko district from the sample. Namisindwa district was eliminated from the sample because at the time of the evaluation it was on high alert for COVID 19 with restricted entry. Based on the population density and taking into account the time limitation, Bududa, Bulambuli and Mbale districts became the sampled districts for the evaluation.

2.2 Data collection methods

Multiple methods were used for collection of comprehensive data to ensure validity and credibility of the data generated as summarised below:

Household interviews: This method of data collection involved undertaking **207** household interviews. The percentage of males and females that took part in the study was 56.4% and 43.6% respectively. Out of the 207 respondents, **8%** were between 16-24 years, **21%** were between 25 to 35 years, **25%** were between 36 to 45 years while approximately **19%** and **17%** of respondents were in the age brackets of 46-54 years and 55-65 years respectively. The remaining 10% were over 65 years.

Meetings / interviews for key informants: These were held with the staff of: METGE, staff of the four implementing partners, M- CAP, ECO-Trust, Trees Resource Centre, Head teachers and Teachers at Biraha, Bumasikye, Watsemba, Kolony, Nakaloke Primary Schools, National Forestry Authority, the District Forest Officer of Bududa District, staff of selected coffee cooperatives and Tree Nursery Bed Operators (TNBOs).

Focus Group Discussions: **10** focused group discussions (FGD) were held for an average of **8** beneficiaries per FGD. The FGDs were mixed for both women and men.
A total of **85** respondents took part as key informants and participants in FGDs. Hence, the total number of respondents for this study was **292**.

Case studies: From the interactions with respondents, consultants identified some case studies based on what was deemed as the most significant changes that have occurred in the lives of the impact groups, how they happened, why they happened and the factors that facilitated the changes. The case studies were captured by way of story-telling, lived reality, observations, transect walks, photography and video clips. The case studies are attached as **Annex 1** while video clips will be made available after the written consent of respondents has been secured. These respondents had given verbal consent before, but Size of Wales advised that consent had to be in writing. The clips will therefore be sent as separate documents at a later date.

The different data collection tools used for the respective categories of respondents are summarised below:

- Interview Guide for Project Staff attached as Annex IV.
- Interview Guide for Political and Technical Leadership in local government is Annex V
- Interview Guide for the Tree Nursery Bed Operators (TNBOs) is Annex VI
- Structured Questionnaire for household interviews is Annex VII.

Most of the qualitative and quantitative primary data was substantially supported by **Literature review.** A list of documents reviewed is attached as Annex VIII.

Zoom meetings were held with [redacted], the supervisor for the evaluation and [redacted], Head of Programmes at Size of Wales. Other climate action actors in Uganda that are not necessarily directly involved in this programme were also interviewed via zoom.

The multiple methods described above facilitated triangulation of data from various sources to ascertain the veracity and sufficiency of evidence upon which conclusions and recommendations were based.

2.3 Data Entry, analysis and presentation

A data entry template was designed using Excel. Code sheets were generated to simplify the data entry process. The data was entered and edited using the double entry method. Data cleaning was done prior to data analysis and a data reliable test carried out to ensure authenticity of the data.

Quantitative analysis: This captured measures of central tendencies and where necessary, regression analysis was done to establish cause-effect measures between and among selected variables.

Qualitative analysis: Qualitative data was analysed in line with the research objectives and variables. Triangulation was made with the quantitative data, selected voices from the beneficiaries and verbatim extractions were integrated in the report.

Ethical Considerations

The team leader and associate consultant had familiarized themselves with the programme during the process of responding to the Expression of Interest and the development of the Inception Report. However, the Research Assistants had to be oriented both on the programme and the Size of Wales Safeguarding Policy 2019. Throughout the exercise, particular attention was paid to explaining carefully the importance of the evaluation. Assurance was made to the respondents that the purpose of the evaluation was not to assess performance with the view of apportioning blame but to measure the relative impact, determine lessons learned and come up with recommendations for future improvement.

During the entire period of primary data collection, effort was made to keep safe from the COVID 19 pandemic. All team members were given face masks and a bottle of hand sanitizer. The team also gave out face masks to the respondents in the FGDs, ensured sufficient-social distance between the respondents, regular sanitizing as some of the ways of keeping safe from the pandemic.

Limitations of the Study

Two main limitations were faced in undertaking this assignment. First, the programme did not have baseline data and there wasn't much information in terms of progress reports from partners to provide background information. Secondly, the COVID 19 pandemic forced the team to leave Namisindwa district out of the sample and limited the number of people per FDG to an average of 8 instead of the ideal number of 12-15.

3.0 CHAPTER THREE: FINDINGS

This chapter discusses the findings of the evaluation putting emphasis on three main criteria of: relevance, impact and sustainability. The criteria of effectiveness, efficiency and overall coherence of the programme were not expected to be given much attention as per the terms of reference. As such they will only be mentioned in passing.

3.1 RELEVANCE

The Mbale Tree Planting Programme (MTPP) was very relevant in the year 2010 and still is to-date. At global level, the programme contributes towards Sustainable Development Goals (SDGs) of: Addressing Climate Action (SDG 13); Affordable Clean Energy (SDG 7); and No Poverty (SDG 1). Climate change increases the frequency and intensity of extreme weather events such as; droughts, floods, landslides, reduced agricultural production and food security. In 2011, 2012, 2013, 2014, 2017, 2019 and more recently 2020, the region experienced appalling landslides and floods in the lowland parts of Bulambuli, Bududa and some parts of Mbale districts. The 2014 landslides in the counties of Bushika, Bushibiro and Nakatsi in particular destroyed 28 hectares of coffee, beans, cassava, sugarcane, bananas, maize and fruit trees. This was in addition to loss of livestock and poultry especially hens and goats. In 2019, Bududa district experienced floods that reportedly swept 20 houses and negatively impacted on livelihoods. Most roads in the district were also flooded, making movement rather difficult. (Source: MWE, 2015).

There are a number of predisposing factors to the effects of landslides and floods. These include; settling in high risk areas such as mountain slopes, lack of access to information on mitigation measures to reduce the effects of landslides; instability of slopes; the temporary nature of houses which makes them prone to collapsing in the event of a landslide; and low level of preparedness in the respective districts. *(Source: PLOS Current Disasters. 2016).*
The MTPP has been relevant in mitigating some of these predisposing factors especially in regard to access to information on mitigation measures to reduce the effects of landslides and ensure slope stability. About 10% of the respondents of the evaluation said that the knowledge acquired from MTPP coupled with access to free fast-growing tropical seedlings have enabled them to plant trees without which the impact of landslides could have been more severe. While 10% looks to be a very low percentage, it should be noted that not all the areas where the evaluation was conducted are prune to landslides.

At national level, the programme fits within the Uganda Forestry Policy 2001 that among other things, recognizes the importance of development and sustainable management of forests on private land, in gazetted areas, within urban areas for the provision of goods and services. MTPP further contributes towards the National Forest Plan 2013 objectives 1 and 2 that aim at: increasing economic productivity and employment through forest production, processing and service industries and raise incomes for households through forest-based initiatives. In the area of employment, MTPP has created jobs for over 101 employees. Further, the programme has contributed to increased productivity of coffee resulting from implementation of climate smart agriculture. This in turn contributes to the National Climate Smart Agriculture Programme developed and implemented jointly by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Ministry of Water and Environment.

MTPP specifically addresses the Sector Plan Core Programme 2 i.e. Promotion and intensification of tree growing on farm. By ensuring constant availability of indigenous tree seedlings, MTPP contributes towards the *#10MillionTrees planting (Help to Restore Uganda's Lost Forest Cover) initiated by the Forest Sector Support Department, a* campaign that has been on-going.

It is worth pointing out that man-made activities have been mostly responsible for the destruction of the forest cover that left Mount Elgon sub-region without trees. These have greatly contributed to the environmental risks noted in the first paragraph under sub-section 3.1 above. Forest destruction is driven by several factors some of which are described below:

(i) Uganda's population growth rate estimated at 3.1% per annum is among the highest in the world. In Bugisu (Mount Elgon) sub-region, the percentage of women aged between 15-19

years who have begun child bearing is 28.2% compared to the national average of 25%. (Source UDH, 2016). In a recent Uganda Police Force Report, Mbale district came top in defilement during the COVID 19 pandemic when schools have been closed. It should be noted that the high teenage pregnancy is exacerbated by a ritual of male circumcision, a transition from childhood to manhood in the Bamasaaba culture. This ritual requires each newly initiated man to have sex with a girl of his choice immediately after healing (Source: Key informant). This further results into early pregnancy. The population pressure causes land scarcity, fragmentation and puts a strain on privately owned-forest due to demand for expanded land for settlement.

The MTPP did not address challenges of defilement, teenage pregnancy, family planning and women and girls' rights. This is an issue that should be considered in the proposed Gender Transformative Strategy, particularly from the perspective of creating fairer gender relations at household and community levels. The MTPP may not have capacity to address all these issues but could explore partnerships with CSOs that promote women's rights and reproductive health to conduct sensitization.

(ii) Other drivers of deforestation include: a dominant economic model focused on economic productivity; rural poverty and the heavy reliance on land as the major source of livelihood for the people in rural setting. Prior to the programme, there was a big motivation towards cutting down trees to create sufficient area for alternative land uses such as farming that offer more short-term benefits than retaining the trees. The continuous use and expansion of land for agriculture had led to increased loss of vegetation cover. This left the ground bare, exposed the soil to run-off, loss of fertility hence decline in agricultural productivity.

(iii) Coupled with the above, was the changed rain patterns that totally affected food productivity resulting into food scarcity. It was evident that actions of the programme addressed multi-dimensional issues by training communities on effective land use and agroforestry practises that increased productivity hence reducing food insecurity.

(iv) The scarcity of land had made it difficult for families to rear livestock. Often times the livestock would destroy the neighbours' gardens, leading to conflicts and payment of penalties. This was mitigated by the programme through provision of seedlings for fodder that made it possible for indoor rearing of livestock or zero-grazing.

(v) Heavy dependency on forest resources especially timber and poles for construction and firewood. Resulting from urbanisation and expanded resettlements, the demand for timber and poles became a motivation for cutting down trees. This depleted the tree resource and people from this region started buying poles and timber for construction and firewood from privately owned eucalyptus plantations. This was costly and poor households could not afford to buy firewood.

(vi) Women and sometimes children would spend three days in a week going to distant places to look for free firewood. This was tedious, risky and time consuming. The MTPP addressed the issue of firewood by encouraging households to plant trees from which thinnings and prunnings could be used for firewood.

The programme addressed drivers **(v)** and **(vi)** by encouraging all community members to plant trees and availed the required seedlings at no cost. Driver **(vi),** was further addressed by supporting some of the beneficiaries with ACE stoves and promotion of Lorena energy saving stoves at household level. This tremendously reduced the amount of firewood used in homes to almost one-third. The above discussion shows that the MTTP was extremely relevant.

3.2 IMPACT

The impact of the MTPP was assessed based on the objectives it had set out to achieve. These were:

- To contribute to the improvement and protection of crop yields and thus food security, leading to more sustainable livelihoods.
- To help the region develop its capacity to adapt to climate change.
- To assist with climate change mitigation by reducing reliance on wood and charcoal as fuels especially in cooking stoves, as well as exploring opportunities for sequestering carbon and the use of voluntary carbon market to bring additional income to farmers.

In addition, the indicators in the current log-frame have been given attention because this study is expected to generate baseline data for the next programme. The log-frame indicators that will be discussed are the ones at the goal and outcome levels as highlighted below:

Goal indicators: Percentage of programme participants reporting improved livelihoods associated with trees and tons of carbon sequestered.

Outcome indicators

1. Total number of trees and species planted.
2. Percentage of trees distributed that survive for 1, 3 and 5 years.
3. Percentage of people adopting and demonstrating agro-forestry practices.
4. Amount of (kgs or tonnes) of wood saved due to Lorena Stove use.

The impact of the MTPP was assessed bearing in mind that there are other climate action actors implementing projects in the same sub-region. Some of the major actors are summarized in **table 1, annex 11.** Notwithstanding, there is some impact that can be wholly attributed to the MTPP, while in other cases, the MTPP only made a contribution.

3.2.1 Goal level indicator 1: Improved participants' livelihoods associated with trees

The impact study established that the programme has yielded positive results such as: access to timber, poles and firewood from woodlots; improved soil fertility; increased food security; increased coffee productivity due to availability of shade trees. In addition, there is a progressive shift from farming in general to tree planting and increased indoor rearing of livestock due to availability of fodder mostly from Calliandra. All these have contributed to increased household incomes and improved living conditions.

Figure 1 below summarises the source of income before the programme and the current situation:

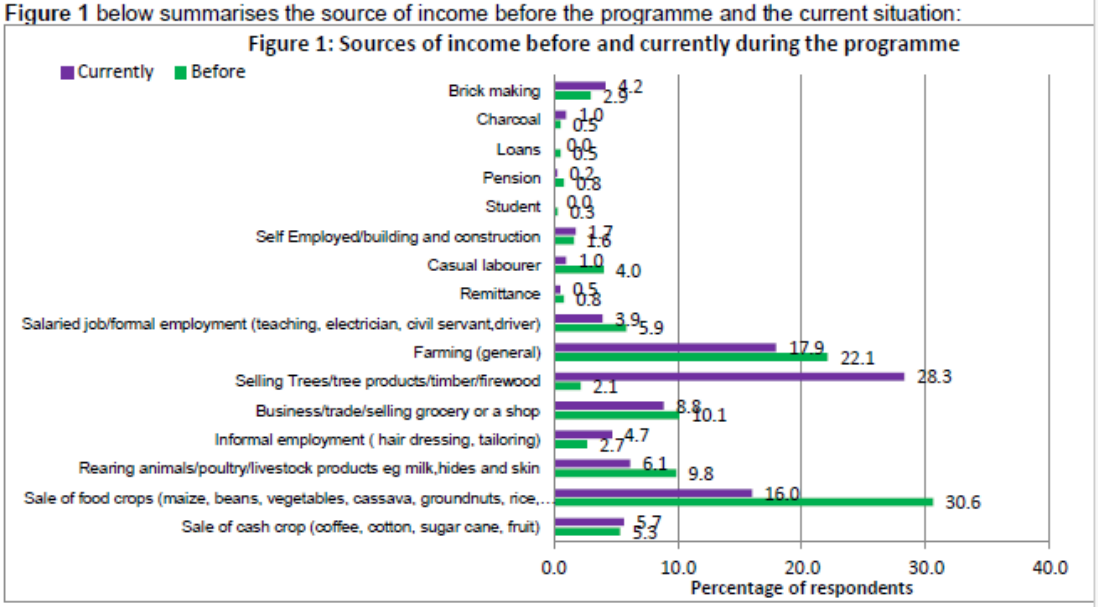


Figure 1 above, shows that on one hand, the number of people whose source of income is sale of trees and tree products has increased from 2.1% to 28.3 %. On the other hand, there is a decrease from 30.6% to 16.0% for people whose source of income is sale of food crops. The explanation for this is that before the programme, more land was under crop cultivation for both subsistence and income generation. The experience of the consultants shows that men usually use their labour for growing food crops for sale, while women concentrate on growing food for subsistence and to a small extent for sale. When the programme started and people understood the importance of trees, most men converted the land and the corresponding labour that were used for production of food crops to tree planting. This has led to a shift in sources of income. Respondents whose sources of income are from charcoal production and brick making have increased a bit. This will be discussed further under other sections of the report.

Sale of timber, poles and firewood: The study found out that some tree farmers have got returns from the sale of timber and poles which enabled them to meet family needs. Many examples of farmers selling timber from their woodlots to meet the school needs of their children and to buy livestock were given in all FGDs. The TNBO of Bunanimi said, *"I sold some trees and got UGX. 1,500,000. I used some money to pay school fees for my children and also bought materials for constructing a new house."* Recently, the same TNBO sold more timber and bought a cow that has already given birth to a calf. While he may not provide precise income from the MTPP, observations around his homestead reveal that he has benefitted a lot from the programme. There are other beneficiaries who have not sold timber and poles but rather used them to construct their own houses and public utilities free of charge as discussed in Case Study Four.
The consultants estimate that income from timber would have been higher if farmers had been well guided on tree planting specifications for timber purposes at the time of planting. Tree species that are good for timber were planted too close to each other without following the recommended specifications. This resulted into competition for nutrients and light, making them grow tall but not big enough for timber production.

Improving yields and food security: Information from the household questionnaires show that the programme has contributed to protecting and improving crop yields. This has been realized due to abundant manure generated from tree leaves as well as protection from sunshine, wind and storms due to shade from trees as shown figure 2 below.

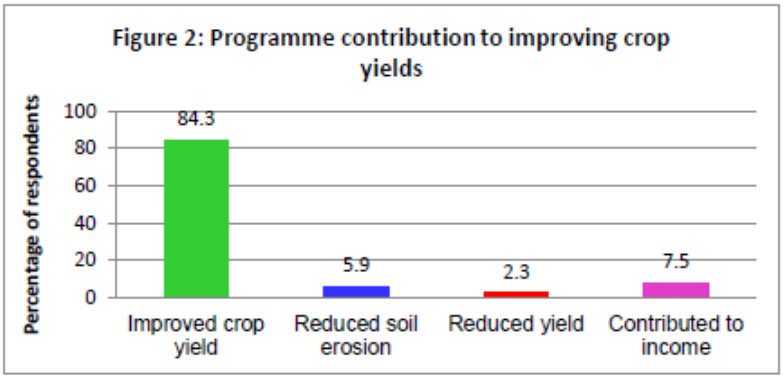


Figure 2 above shows that 84.3% of the respondents said that crop yields have increased, while only 2.3% of respondents indicated that yields had reduced.

The consultants were able to validate improved crop yields using the project of International Centre for Insect Physiology and Ecology (ICIPE). ICIPE implemented a Push-Pull Technology (PPT) project in different districts for the period 2015-2017 and Mbale was among the districts. The PPT is a biological method of intercropping maize with *Desmodium notatum* and a certain grass species. The mono-cropped maize fields were the control plots where there was no intervention by ICIPE.
The project findings showed that in 2016 and 2017, maize yields in Mbale district were higher compared to the adjacent districts that are outside the MTPP as shown in table 2 below.

Table 2: Combined maize grain yield harvested from PPT trial plots and mono cropped maize in Eastern Uganda.

District	Push Pull Technology Plots (t/ha)			Mono-cropped Maize Plots(t/ha)		
	2015	2016	2017	2015	2016	2017
Bugiri	2.26 (0.87)	1.75(0.63)	1.57(1.01)	1.50(1.53)	0.94(0.47)	0.70(0.45)
Bukedea	2.57(0.75)	1.56(0.63)	1.18(0.38)	0.67(0.38)	0.88(0.36)	0.49(0.10)
Busia	1.40(0.79)	-	-	0.52(0.33)	-	-
Iganga	-	0.85(0.54)	0.58(0.42)	-	0.77(0.48)	0.37(0.23)
Mbale	2.4(1.01)	3.22(1.10)	3.76 (1.33)	0.74(0.59)	2.27(0.75)	1.79 (1.44)
Pallisa	4.48(1.46)	3.56(1.15)	1.64(0.66)	2.37(0.95)	1.74(0.55)	0.75(0.47)
Tororo	1.78(1.18)	2.10(1.09)	1.99(0.61)	0.18(0.19)	0.48(0.48)	0.40(0.19)

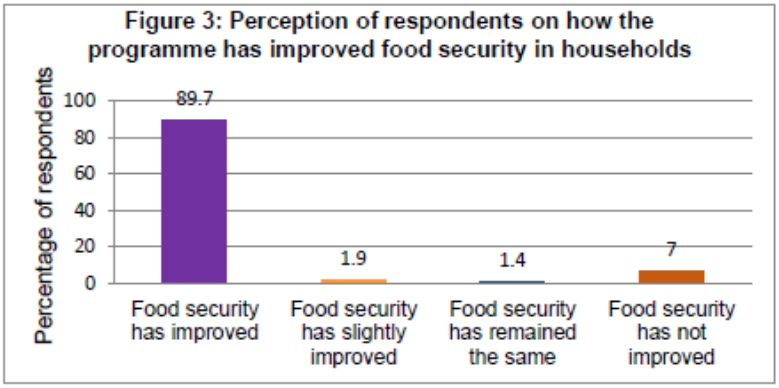
Values in parenthesis are standard deviations ***(Source: ICIPE)***

Considering the mono-cropped maize crops (which are the control plots), it can be seen that in 2015, the districts of Bugiri and Pallisa performed better than Mbale which had on average 0.74 tonnes per hectare. This is because the trees that had been planted under the MTPP had not grown to levels that could improve the weather. However, in 2016 and 2017 the yields for mono-cropped control gardens in Mbale superseded those of Bugiri and Pallisa and were at 2.27 tonnes / hectare (t/ha) and 1.79 t/ha respectively (see highlighted part). This confirms the findings of the study that Mbale Tree Planting has contributed to increasing crop yields.

Food security

Key informants and FGDs pointed out that before the programme took root, there was food scarcity especially in the months of January, April and May. Some households depended on sorghum which they used to buy, yet the sources of income were limited. Eating one meal a day was common in many households. This has changed because of increased crop yields and availability of bananas commonly known as Matooke in areas where they could not grow due to poor soils and prolonged dry weather. A case in point is Busiu sub-county where only a few crops such as millet, sorghum, cassava and some pulses were grown. The programme component of agroforestry helped to improve soil fertility and made growing of Matooke possible. Currently there is evidence of Matooke growing in Busiu sub-county and some households have more than what they can consume. This is further substantiated by a case study in **Annex 1** and the accompanying video clip.

Quantitative data confirms that improvement in food security has mainly been realized due to increased rains, improved soil fertility, protection of crops from harsh conditions and sale of fruits to buy food. . All these have led to increased access to food as shown in Figure 3 below.

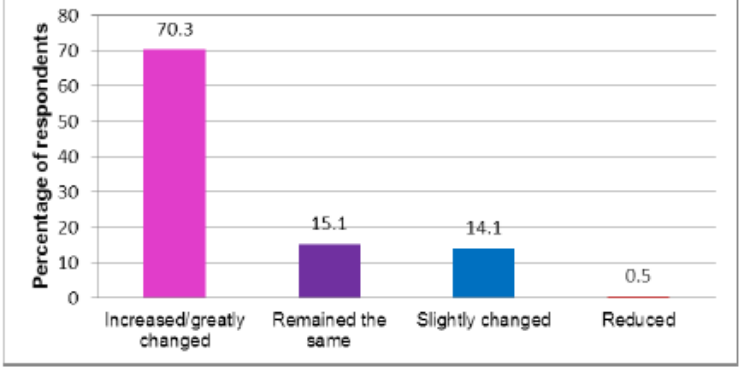


The above figure shows that 89.7% of the respondents attest to improved food security for households. This percentage is close to the 84.3% of respondents who indicated that they had realised improved crop yields. Food security has been further enhanced by incomes from sale of firewood, poles, timber and fruits such as avocadoes from trees planted under the programme. This is another source of income that can be used to buy food in-case of scarcity.

However, the local market price is very low because almost all households have their own avocado trees. It is worth pointing out that the fruit tree seedlings promoted under the programme were only indigenous. It is only in January 2020 when Salem Brotherhood introduced naturalized exotic mango species known as Kakure from Budaka. This type of mangoes can be easily marketed even beyond Mount Elgon region. In addition, there is an avocado species known as *Persea americana* **(Hass)** that is in high demand which the programme can explore and promote in the next 25:25 programme.
This notwithstanding, the consultants cannot in any way down play the issue of firewood. Firewood is a facilitating factor of food security in the households. Households cannot be food secure if they are energy insecure, therefore the availability of firewood facilitated food utilization.

Economic benefits from the tree planting project for coffee farmers

Figure 4: How income from forest related activities has changed



The findings under this sub-section are mainly informed by beneficiaries from Bududa and Bulambuli districts that are under MEACCE. Under this programme MEACCE had set one of its objectives as production of shade trees to protect coffee crops. All FGDs conducted in the two districts agreed that there was improved productivity of coffee under shade trees. FGD respondents pointed out that shade trees within coffee plantations reduce the risk and effect of hailstorms that are frequent in the sub-region. They further pointed out that as shade trees grow and shade off leaves they act as mulch which keeps moisture in the soil. The mulch reduces the cost of weeding and helps in managing weeds which would otherwise compete with the coffee for nutrients. These combined advantages make the coffee berries grown under shade trees bigger, heavier and of better quality. This information was triangulated with discussions by key informants from Konokoyi Cooperative Association. These strongly support the agronomical practice of planting shade trees in coffee plantations as a strategy for improving the coffee quality and productivity.

Members of the FGD at Konokoyi confidently stated that coffee farmers who planted shade trees in their coffee plantations harvest 5 bags compared to 2 bags for the farmers who did not intercrop with shade trees. The same was found to be the case in Bulambuli district. This translates into 150% increase in coffee productivity. This is supported by the findings of the Climate Change Department under Ministry of Water and Environment (MWE) which showed that there was an increase in coffee yields of the order of 2 to 2.5 times for Bududa farmers who shifted from Business as Usual (BAU) to Climate Smart Agriculture. Climate Smart Agriculture in coffee production according to the MWE study entailed planting of shade trees, mulching and trench construction. This narrative further compares with research findings published in the*: Journal of Sustainable Development; Vol. 8, No. 9; 2015 ISSN 1913-9063 E-ISSN 1913-9071 Published by Canadian Center of Science and Education that published a case study Effect of Tree Shade on Coffee Crop Production, see section 5.0.*

It is worth pointing out that the coffee farmers who are under IPs other than MEACCE, used *Grivellia spp*. as shade trees in coffee and banana plantations. These farmers pointed out that they have found *Grivellia* unsuitable as a shade tree. Some people assert that *Grivellia spp* have damaged their coffee and others said that the land had become infertile. The consultants strongly believe that the negative effects are a result of failure to follow the recommended spacing guidelines.

From the above discussion, it is evident that MEACCE is more effective in supporting coffee farmers than BDRC, SAB and SAO. This is not surprising because coffee growing is MEACCE's niche.

Sale of medicinal products: In Busiu sub-county, there has emerged two medium-scale factories for producing energy drinks. One of them is Nguvu kwa Afya that started operating in 2013. Among the raw materials for making the drinks are leaves, tree barks and roots of some of the medicinal trees promoted under the programme. It is believed that this drink enhances men's libido and therefore the demand is high. Nguvu kwa Afya is currently employing 70 youth, the majority of whom being females. The daily pay is UGX. 5,000 and UGX. 1000 if one works overtime. While these two factories present a potential market for tree farmers, at the moment only few people are involved in the sale of raw materials. This testimony was given by two TNBOs of Wari village and Bunanimi. In Wari village, one beneficiary started supplying raw materials in May 2019 and has supplied four times, earning UGX 70,000 in total. In Bunanimi, one of the neighbours to the nursery operator who planted Neem trees eight years ago has been selling wet (undried) Neem leaves to the same factory. One bag of wet leaves is bought at UGX 20,000. He has so far sold 10 bags and earned UGX. 200,000 in a period of three years. A total of about six beneficiaries are involved in this business. The income from the medicinal raw materials is still very low. It is important to encourage beneficiaries to plant trees that are of higher medicinal value and organise themselves for bulk selling. This will increase their bargaining power so that they generate significant income. On the flip side, there are some community members who have not prioritised tree planting but have started unauthorised harvesting of medicinal products from beneficiaries' woodlot using unsustainable methods.

Making and selling organic pesticides: The TNBO for Bunanimi nursery site started making organic pesticides on a small scale in February 2020. His main intention was to make available organic pesticides to farmers who pick fruit trees from the nursery. He has been giving the pesticide free of charge and the demand is increasing. People have realized that organic pesticides are effective in managing both pests and also improving soil fertility unlike inorganic pesticides. While this respondent continues to provide the pesticide free of charge to the beneficiaries who pick seedlings he has also started selling to other people. By the time of this study he had sold pesticides worth UGX. 65,000. While this is a one off example, there is need to encourage all the people who were trained with him to start making organic pesticides. This is particularly important given that the use of inorganic pesticides has been affecting colonization of beehives hence affecting honey production.

Sale of seeds: While this is potentially a lucrative business, the project beneficiaries have not benefited from it. The IPs have been buying seeds from the Tree Resource Centre (TRC) but there has not been reciprocity of the TRC buying seeds from the beneficiaries of the programme. Yet some of the trees that were planted at the start of the programme are now able to give seeds. This is an area that should be explored as it will motivate the beneficiaries to keep their trees as mother gardens for seed production and not cut them down for timber. This approach can facilitate creation of community seed banks with the triple advantages of: (i) reducing the amount of money MTPP pays to TRC hence increasing efficiency. (ii) a source of income for tree farmers/owners; and (iii) contribute to future sustainability of the nurseries.

Bee Keeping: The evaluation team came across two groups that are involved in bee keeping; Sunu Bee Keepers Group (SBKG) under SAO and Kolonyi Mixed Farmers Group (KMFG) under SAB.
SBKG was supported by MTPP with 40 KTB hives in August 2018, while KMFG is self-sponsored.
The bee keeping enterprise has not realized the anticipated financial benefits for both groups. Discussions with the members of SBKG revealed that they were not well trained in bee keeping, despite their vigilance. Members of the group indicated that out of the 40 beehives, only five colonized in the first six months. Even so, the five beehives were attacked by black ants and the bees migrated. By the time of the evaluation, 13th August 2020, two years after getting the bee hives, only 5 litres from two bee hives had been harvested. However, members pointed out that 20 bee hives had colonized and nine (9) were ready for harvesting. Had the members of SBKG practiced good management, they would have harvested four times within two years. A comparison is made with a CBO around Matiri Central Forest Reserve in Kyenjojo District that harvests 10-15 kgs per KTB hive per season and they harvest twice a year.

Similar findings were observed in KMFG where the respondent stated that she started bee keeping with 10 local bee hives after undergoing training at Saleem Brotherhood in 2011. After six months, she harvested 5 litres of honey per beehive and was able to harvest twice a year.

This convinced her that bee keeping was a good income generating project. She interested her neighbours to form a group, KMFG so that they could produce more honey and benefit from bulk selling. By 2015, a group of 22 members, 18 women and 4 men had been formed. Each of the members was free to bring as many bee hives as s/he could afford to buy. The bee hives were seated in the same area but ownership remained individual. By 2018, the total number of bee hives had gone to 85, all self-procured. Members bought metallic bars upon which the bee hives could sit. However, the place where the bee hives were seated was not well secured and the metallic bars were stolen. This left the beehives on the ground, disturbed the bees and some of them migrated. The members tried to put the bee hives up but this time they used untreated wood which is susceptible to termites. It did not take long and most of the beehives fell to the ground. This greatly affected honey production.

Further discussion with the chairperson of the group revealed that the members were well trained and they understand how to manage bees very well. However, the male youth[1] who are responsible for harvesting are very mobile and unavailable when the harvesting time is due. This is because of the nature of the work they do (mainly masonry) which requires them to move from place to place. The implication is that harvesting is mostly done when it is late and the honey has been consumed by the bees in readiness to reproduce. In other cases, when the male youth want to travel, they tell the group that they will harvest before leaving and they do it when the honey is not ready.

At one time, there was a staff at Saleem Brotherhood (SAB) who used to help this group to harvest but is no longer there. The consultants recommend that young and energetic women within the group get well trained in harvesting techniques and be given the modern honey harvesting gear that is safe and gender neutral. This recommendation has no cultural barriers, it was discussed with the chairperson of KMFG during the evaluation and she supported the idea.

This group has also faced challenges of black ants, lice-like pests that infect bees and other pests that bite off the wings of bees. In 2017, a staff of SAB discussed these challenges with the Mbale District Entomologist who requested for support from the Ministry of Agriculture, Animal Industry and Fisheries. The officials of MAAIF made a visit to the beekeeping project, took samples for analysis but did not give any feedback. While there is a Cooperative for Bee Keepers in Mbale town, it has also not been vigilant. All this notwithstanding, the bee keeping group has not given up but is still pressing on.

Fallen beehives after termites damaged wooden stands

Some of the KMFG bee hives sited on treated poles

[1] The youth are part of the group members

Employment of staff in METGE, implementing partners and at community level.

As already alluded to under the section of relevance, the Mbale Tree Planting Programme has contributed to the National Forest Plan 2013 objective 1 that aims at: increasing economic productivity and employment through forest production. In this regard, the programme employs 101 people, who are full time employees and a few others (Lorena stove constructors) on part-time basis.

The impact evaluation sought to understand the sources of income for the people before they were employed by the project. The following responses came out:

i) Some were fresh from school and had never been employed.
ii) Some were farmers on a very small scale.
iii) Others were working on other projects that had ended.
iv) Others were retired pensioners.
v) Some used to trade in timber and had become redundant because there were no more trees for logging.
vi) Others chose to switch jobs because they were looking for better opportunities.

Table 3: Number of the people employed by MTPP

Category	Number of people	Number of women	Number of men	Percentage of women
METGE	7	4	3	57.1
SAO	3	0	3	0
SAB	3	1	2	33.3
MEACCE	3	0	3	0
BRDC	3	1	2	33.3
TNBOs	55	10	45	18.2
Facilitators	27	0	27	0
Total	**101**	**16**	**85**	**15.8 (average)**

At METGE level, the Executive Director is a woman deputized by a man. There are two programme officers one of whom is a woman. However, when it comes to the TNBOs and facilitators, the gender gap in respect to equal opportunities for employment becomes very pronounced at 18.2% and 0% women TNBOs and facilitators respectively. The consultants are of the view that participation of women as TNBOs and facilitators needs to be given serious attention. This view is based on the understanding that there has not been any deliberate effort to look out for women who can meet the criteria for becoming TNBOs and community facilitators. While facilitators have been on board for only one year, TNBOs have been working with the project for a considerable time of over six years.

The TNBOs started voluntary saving and loaning associations (VSLA) and a merry-go-round, where they pool UGX 50,000 of their monthly salary and give it to one TNBO at a time until all of them have been given. This merry-go-round enabled one of the members to buy a water pump on hire purchase that has made it possible for him to plant vegetables for sale all year around. Further, over 50% of the 55 TNBOs have constructed or are constructing new houses, although some have taken long to complete.

It was not possible to establish the differences that have occurred in the livelihoods of the staff employed under the programme because of the high staff turn-over. Most of current staff are very new. The consultants perused through information related to staff salaries for METGE and the implementing partners under MTPP and made comparison with similar organisations. Based on the findings, it is the opinion of the consultants that a salary survey be conducted that can inform decisions on salary structures of the staff. This could contribute to motivation of staff hence their retention.

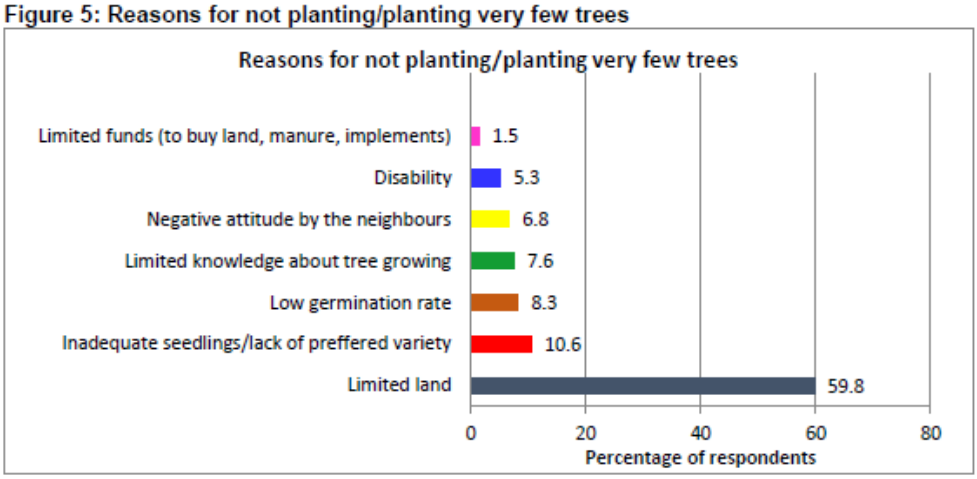
3.3 CLIMATE CHANGE MITIGATION

Climate change mitigation by programme participants/ beneficiaries requires that they have knowledge and understanding of the drivers, effects and mitigation measures for adapting to climate change. This should be coupled with willingness to put the knowledge into practice. This evaluation assessed what was done under the programme and the corresponding outcomes and impact.

Improved agroforestry/ tree planting knowledge, understanding and practice
The MTPP made available seedlings of indigenous (native) and naturalized exotic species in proportions of 80% and 20% respectively. The list of species and their uses is attached as Annex 111.

Detailed information from one of the nurseries showed that out of the 37 species presumably promoted under the programme, 28 species accounting for 76% were not available for the months of April, May, June and July 2020. This corroborates the finding that one of the reasons why 10.6% of beneficiaries interviewed in this impact assessment are not planting trees is because the preferred species are not available at the nurseries.

Figure 5: Reasons for not planting/planting very few trees



Aware that 59.8% of respondents say they have limited land, the programme should continue with a strategy of promoting agroforestry. This needs to be carefully done to ensure appropriate compatibility of tree species with the respective crops. For example, while *Calliandra* is very important for fodder, nitrogen fixing and good for bee keeping, coffee farmers should **not** plant it near the coffee plantations because it is a habitat for coffee pests (Source: HRNS, Mityana 2019). *Grevillea* is important for nitrogen fixing when young and farmers should be advised so. As the tree matures it does not fix nitrogen but rather extracts nutrients like any other species. The tree species listed under in **Annex 111** are multi-purpose and the consultants recommend their continued promotion. It is also suggested that the following tree species be added in the nursery: *Kiapple* for live fence, *Sesbania sesban* for fodder and nitrogen fixing, Bottle brush for medicinal benefits, Castor oil for nitrogen fixing and seed for oil extraction as well as explore (based upon scientific evidence) the potential for growing the Shea nut tree which is of high commercial value.

The challenge of limited land for tree planting should be handled as an advocacy issue. There are Local Forest Reserves that are under the mandate of District Local Government. METGE should engage with the District Local Government to explore the possibility of supporting women and youth groups to secure access rights to plant trees through Land Lease arrangement. Another way would be to support the groups to secure Permits for planting trees in Central Forest Reserve under the National Forest Authority (NFA). NFA has been giving 25-50 year Permits to individuals, companies and community groups to plant trees and community groups are usually given priority over others. This should be possible unless all the land has already been leased out.

Understanding of agro-forestry: The evaluation established that the beneficiaries of the programme have good understanding of agroforestry and are able to articulate the results chain and benefits.

Almost all beneficiaries practice agroforestry and boundary planting. It was only 7.6% of the respondents who indicated that they had limited knowledge about tree planting. It was also evident that capacity for tree nursery establishment has been built not only for TNBOs but also for their household and community members. The management practices of the nurseries visited were rated as excellent. It was only the issue of spacing and intercropping that most beneficiaries were not following the recommended guidelines. Quantitative data for non-coffee farmers shows that only 4.2% and 2.1% were following guidelines for intercropping and tree spacing respectively.
However, there are some other techniques of climate smart agriculture that were adopted by beneficiaries after they were trained by MTPP. These are shown in table 4 below:

Adopted technique	Percent
Making drainage channels/trenches	40.5%
Digging water collection pits	5.8%
Contour Ploughing / Terracing	16.0%
Grass strips	5.4%
Mulching	10.0%
Applying manure	2.2%
Crop rotation	7.4%
Potting	1.1%
Preparing/digging holes for planting	4.4%
Pruning	12.6%
	100.00

While the overall average for contour ploughing and terracing is at 16%, in Namatyale it was found out through FGDs that slope stabilization using contour bounds and terracing is practiced by over 70% of households.

Figure 1 [redacted] *in his garden with contours of grass strips*

The average number of trees per acre planted under the programme
While it was easy to establish the number of seedlings picked or delivered from the nurseries over the years, it was not easy to ascertain whether all the seedlings picked from the nurseries were planted. This was because not all beneficiaries planted in woodlots, rather most planted along their land boundaries, in the compounds, along the roads and within their banana, coffee plantations and other crops. Only a few of those who planted woodlots followed recommended planting standards and as such, it is almost impossible to estimate the number of trees per acre. Literature review however, shows that on 11th October 2019 the 10 millionth tree seedling was planted based on the nursery records of the number of seedlings picked.

The consultants made effort to find out the survival rate but this was an uphill task given that record keeping is not a common practice in the rural areas. It is hoped that this challenge will be overcome when the process of mapping/ geo-referencing beneficiary trees by the IPs is concluded. Notwithstanding, some estimates were made through interaction with farmers in FGDs and in schools where there were records and physical counting of trees was done. Each member of the FGD was asked to try and recall the number of seedlings picked from the nursery with the current number of trees owned. This estimate would be discussed by the people in the same FGD and consensus built on the actual number of surviving trees. The figures generated from FGDs are summarized in table 5.

Table 5: Estimated survival rate (ESR) from key informant interviews and FGDs

Area /District	Responsible IP	ESR (%)	Comment
Konokoyi - FGD (1)	MEACCE	50	The farmers have largely been intercropping trees with coffee. However, some of the trees and coffee were swept away by the floods and landslides.
Konokoyi- FGD (2)	MEACCE	60	
Bukalasi- FGD	MEACCE	74	Most of the trees survived except those that were planted along the river bank which were swept away by floods.
Bunanimi - FGD	SAO	50	The nursery raised and distributed 150,000 trees per year. The people have planted trees and attest to benefits mainly firewood and fodder.
Bunamasikye C.O.U, P.S - Mbale	SAO	40-60	The Head teacher decried the issue of free- range grazing of cows that damage the young trees. Schools are not fenced and most of them have no security guards. School neighbours uprooted some of the trees. Improved oranges and mangoes did not survive because they were easily attacked by diseases. The few orange seedlings that survived have not even flowered for three years.
Sunu FGD -Mbale	SAO	65	Some community members have been uprooting the seedlings and taking them to plant in their own gardens. The uprooting in most cases results in dying of the seedlings.
Namasaba - Mbale	SAB	70	The Assistant Project Officer resides in this area, he is very vigilant in monitoring and readily available to give technical support. Therefore the survival rate is high.
Watzemba P.S - Mbale	SAB	30	This was for the 1st batch planted in 2010 before gaining experience in tree planting.
Watzemba P.S - Mbale	SAB	100	The second batch of *Mangifera indica* and *Measopsis eminii* did very well.
Watzemba P.S - Mbale	SAB	10	Only 3 out of 30 *Grivellia* seedlings planted in 2016 have survived. The main challenge is termites.
Namagumba P.S - Mbale	SAB	0.001	Only one (1) tree could be traced in the entire school premises. The biggest challenge was irresponsible grazing of cows and goats by community members.
St. Kizito - Biraha P.S		100	There is a very vigilant head of agriculture and environment department who resides at the school. There is a security guard who works day and night.
Namatsale - Mbale FGD	BRDC	85	The area does not have many termites. Where they find an anthill, the community members work together to destroy it using the ant-killer given to some of the farmers under the government programme of Operation Wealth Creation.

Sample Methodology Detail:
A total of 80 farmers participated in focus group discussions to determine tree survival rates. Each participant made an estimate of their own trees and survival rate which was then discussed and scrutinised as a group, before calculating an average for the whole group.

The tree survival rate in schools was determined by physically counting the trees planted under the MTPP. These were compared with the seedlings delivered or picked by the schools based on the school records.

All these averages were then used to calculate the survival rate for the programme since 2010. Additionally, the dashboard of MTPP was also used to estimate the tree survival rate for the trees planted since 2018. For a sample of 65 farmers who collected and planted 28,892 tree seedlings in 2018, the survival rate is 83.9%. This is a very good survival rate considering that in tree planting and growing, the survival rate is calculated based on the assumption that at least 20% of the planted trees die by the third year of planting. However, for MTPP, the mortality rate 16.1%. It should however be noted that 65 farmers out of the 1800 is a very small sample and may not be representative.

By making a simple average of the above figures, the estimated survival rate of the planted trees is 57.2%. This could have been higher if it was not for the low survival in some schools. **Notwithstanding this survival rate is positive.** According to the stocking, survival and thinning regimes of ECO-Trust, the ideal survival rate after 10 years is 62.5 % where very good tree planting and growing specifications have been followed and grazing livestock when the trees are still young is totally prohibited. This survival rate is calculated based on the assumption that at least 20% of the planted trees die by the third year of planting. For woodlots of mixed indigenous species like the ones under the MTPP, the initial planting per hectare is 400 seedlings. Establishment is at 320 trees. The first thinning done after seven (7) years leaves 294 trees, the second thinning done after 10 years leaves 250 trees. Making comparison with the tree planting project implemented by CARE International in Uganda and JESSE in Itwara Central Forest Reserve, whose survival rate was 51%, it can be said that **the MTPP survival rate is reasonably good.**

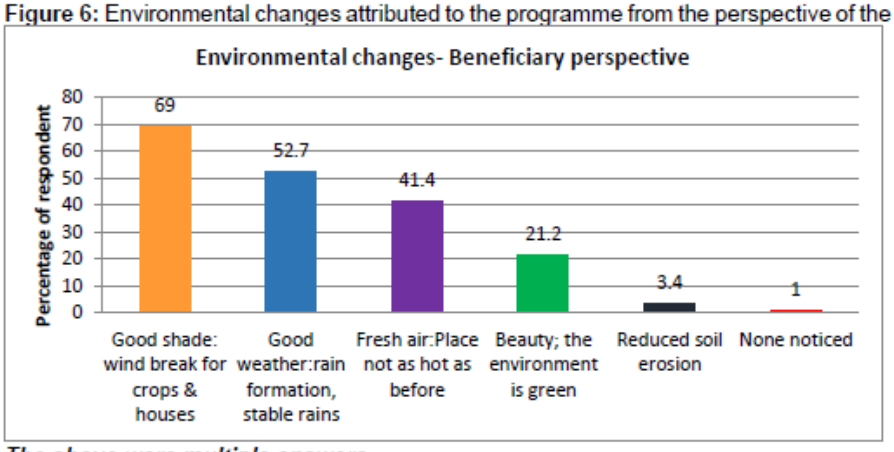
Environmental impact

Beneficiaries have planted trees on private land, around homesteads, along the paths to their homes, in their gardens for both annual and perineal crops, along land boundaries and in school compounds. There is increased biomass and forest cover on private land in Mount Elgon sub-region of Uganda. It is also evident that deforestation on farmland has reduced.

Furthermore, beneficiaries do not frequently cut down trees for household firewood, they mostly use prunnings and sometimes thinning. As a result, positive weather changes have been observed.

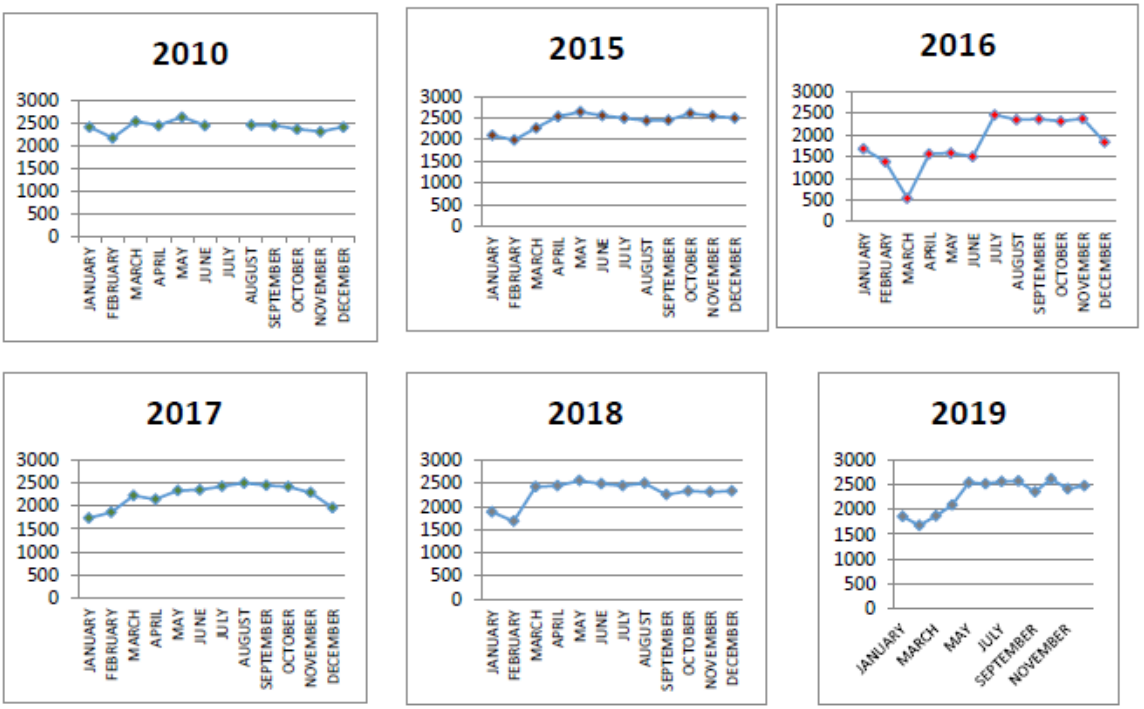
Respondents in all the FGDs confidently pointed out that when the trees they planted had grown and the tree cover had increased, the rainfall in their areas increased were stable for the last three years 2017, 2018 and 2019. This agrees with information generated using the household questionnaires where 52.7 % of respondents indicated that the programme has contributed to good weather, rain formation and the rains are stable as presented in the figure 6 below.

Figure 6: Environmental changes attributed to the programme from the perspective of the beneficiaries.



The above were multiple answers.

The respondents' opinions in respect of rainfall, were triangulated with data from the Buginyanya Meteorological Station presented in **Figure 8 below**: Rainfall data



The years 2018 and 2019 had good rainfall distribution and sunshine patterns conducive for farming. This agrees with what 52.7% of the household respondents said when they indicated that the programme had contributed to good weather, rain formation and stable rainfall.

The consultants take cognisant of the fact that there were other climate action players who were involved in promoting tree planting. The major ones are listed in the table below.

Organization / Agency	No. of Beneficiaries	Duration of Project (years)	No. of Trees Planted
UNDP	25,441	3	365,280
ECO-TRUST	239	So far 4	24,470
ICRAF / NARFFOLI	5,500	5	500,000
SIZE OF WALES/ MTPP	18,000	10	10,000,000

The above table shows that MTPP contributed the highest number of trees planted. At the same time, it has had a sustained period of engagement with the communities that doubles that of the second longest period under ICRAF. It would therefore not be an overestimation to say that MTPP has greatly contributed towards the improved weather in Mount Elgon sub-region.

Supporting schools to reduce damage on the infrastructure: Several schools such as Watzemba Primary School and Bumasikye C.O.U Primary School had awful experiences brought about by strong winds and hailstorms. In Watzemba, on one occasion, the roof of the school kitchen and latrine blocks were blown away by strong winds. On another occasion, the roof of a two-roomed teachers' house was carried away by wind. Similarly in March 2017, Bumasikye C.O.U Primary School experienced a storm that removed roofs from some of the buildings and caused enormous damage to some of the school property. These incidents were an eye opener for the School Management Committees (SMC) on the importance of planting trees. The SMCs committed themselves to planting trees within the school premises and were supported by the respective IPs with seedlings for planting. The IPs further taught

the SMC and teachers the techniques of planting trees in strategic points around the schools to effectively mitigate the risks of wind and hailstorms.

The school head teachers and teachers who took part in this evaluation said that during the rainy seasons, they would be totally worried and uncertain of how they would go through the rainy seasons. This they said, is not their worry anymore because the wind breakers have grown to over seven feet (7') and can ably mitigate the risks of hailstorms and winds. Similar experiences were re-echoed by key informants at Nakaloke and Kolony Primary Schools.

Additionally, one of the IPs, SAB has continuously advised the school administration on where to construct new buildings basing on the direction of the wind. This section of the report has only discussed benefits related to climate change mitigation at school level. However, under **section 4** on the social changes other examples of positives outcomes in schools as a result of the MTTP will be discussed.

Terminalia species planted at Nakaloke Primary school as wind breaks

Restoration of the forest fauna: The World Conservation Union (IUCN) has listed 37 fauna species in the Mount Elgon Sub-region as globally threatened (i.e. 22 mammals, 2 insects and 13 bird species) of which 9 species are endemic (IUCN, 1995). Owing to the rarity of some of its bird species, the region has been given the status of an Important Bird Area (IBA). It is also one of very few locations worldwide, where the Elgon Teak (*Oleacapensis*) is found (Source: ECO-Trust, 2020). This evaluation revealed that the restoration of the natural biomass resulting from planting indigenous trees has made it possible for two types of birds (Inguyi/ Lingasa and Imanda) that had disappeared from the region to re-surface. These birds have been seen in Namatsale village and in Bududa district.

Traditionally the Inguyi (Hornbill) was known as a very special bird that would give early warning signs to farmers. Whenever the Inguyi birds would fly from the South to the North, perch on trees and start making noise, it signified a wake-up call to farmers to start planting. When the birds moved from the North to the South, it meant that the sunny season was about to begin. Equally importantly, when these birds moved down from the trees and walked on the ground, it meant that pests had started invading gardens. This would alert farmers to prepare a lot of ash from their cooking places and sprinkle it in their gardens. The scientific interpretation of this is that such birds would have sensed presence of crop pests that are their prey and would go down in the gardens to eat them. This notwithstanding, it enabled farmers to manage the pests in a timely manner hence reducing the losses that they would have experienced.

Such indigenous knowledge of early warning system is very important in Uganda where small and medium scale farmers do not easily access weather information from the Meteorological Department in time and agriculture extension services are very weak. This knowledge has not been extensively shared across all programme beneficiaries but is currently known in Namatsale and Bududa district. As the documentation of programme achievements is ongoing, such indigenous knowledge can be validated and used by the programme teams to support communities in early warning actions. It should be noted that the consultants did not come across any staff with knowledge or understanding of

Disaster Risk Reduction (DRR), yet the programme activities are contributing to DRR. The follow on programme may consider introducing and integrating DRR in activities because the target area is vulnerable to natural disasters.

Carbon Sequestering and Voluntary Carbon Market: The evaluation established that out of all the respondents, only one was aware of the carbon sequestering and voluntary carbon market (VCM). Information got from a key staff at METGE indicated that an attempt was made to discuss with ECO-Trust with an objective of linking the beneficiaries with the ECO-Trust Initiative of VCM but this was not concluded. Since 2017, ECO-Trust has been implementing a project known as "Trees for Global Benefits" and is active with the carbon credit initiative in Mount Elgon sub-region.
ECO-Trust staff confirmed having held a discussion with M-CAP that was managing the programme at that time. ECO-Trust conducted a feasibility assessment and recognized the potential of farmers under the MTPP. It was expected that M-CAP would prepare the farmers, but the process stalled. This is likely to have been due to the changes in the management of the programme.

ECO-Trust's VCM intervention is implemented in Bududa, Manafwa and Mbale. The main objectives of the intervention are to: (I) provide medium to long-term agro-forestry benefits of improved agricultural productivity, shade and windbreaks for crops and houses. (ii) Provide timber and fuel-wood thus reducing pressure on protected areas by providing fuel-wood obtained through tree management operations of thinning, pruning pollarding and root pruning. (iii) Produce medicinal products, honey, as well as herbaceous fodder for domestic animals (IV) provide soil erosion control and biodiversity conservation benefits by integration of indigenous trees into rural landscapes (v). Produce high quality intercrops throughout the rotation period in dispersed inter-planting or during the first three years before competition starts affecting trees or crops in case of woodlots.

For the farmers to benefit from the carbon credits, ECO-Trust has to undertake an assessment of standards, take farmers through the process of certification for the partnership to be finalized. This project has particular technical specification of 7x7m, 8x8m and 5x5m spacing recommended for woodlot, dispersed inter-planting and boundary planting systems respectively.
This is viewed as an opportunity to incentivize farmers not to cut down trees. According to ECO-Trust the opportunity is still open and MTPP staff are free to initiate a discussion.

Reduction on reliance on wood and charcoal as fuels especially in cooking stoves
Reliance on forest and tree products in form of firewood and charcoal is among the drivers of deforestation. 90% of Ugandans use firewood and charcoal especially in rural areas where there are limited options for fuel for cooking. Most rural areas are not connected to the electricity grid. Even those that are connected cannot afford to use electricity and gas for cooking because it is very expensive. Construction of bio-gas systems is challenged by the lack of sufficient raw materials coupled with the high construction costs involved. This leaves most people with the option of using firewood and charcoal. The programme recognized these shortcomings and started promoting free fuel wood saving cooking technologies.

Two types of improved cooking technology were introduced under the programme, the Lorena and ACE Stoves. The ACE Stoves are moveable and were only given to programme staff and nursery operators. The Lorena Stoves (LS) are constructed as permanent and the programme trained people in constructing those stoves. Any beneficiary that was interested, would get a trained person to construct the LS in her/his kitchen. The findings of the evaluation show that the construction of LS ranged from fair to excellent. In Nakaloke, the woman who is responsible for construction of the LS has very wide experience. She was trained earlier on by Integrated Family Development Initiatives and has done a commendable job.

Adoption and use of fuel saving cooking technology
The consistent use of the LS has a mixed picture. In Namatsale village, Bunghoko sub-county, about 70% of the beneficiaries use stoves consistently and exclusively. This is the highest under the MTPP. Before the MTPP started 100% of the households were using the 3-stones. The Namatsale beneficiaries talk very passionately about the benefits of using LS and even go ahead and vow that

they will never go back to the 3-stone methods. To them, it has been a total transformation. The consultants witnessed usage of LS in at least 6 out of 8 households that were sampled. Similarly in St. Kiziito Catholic Primary School Biraha, the LS for the school was found to be well maintained, even when the school was under COVID 19 lockdown. The teacher who was found at the school had special appreciation for MTPP. On the contrary, in Nakaloke Town Council, and Busiu sub-county, consistent use of the LS is **very low**. Most of the beneficiaries have abandoned the Lorena Stoves and reverted to use of unimproved charcoal stoves and the traditional 3 stones. In some cases the Lorena Stoves are used concurrently with the 3-stones or ordinary charcoal stoves as shown in the picture below.

The first three cooking stoves were found in one kitchen.

For example, in Sunu village, out of nine (9) household representatives who were present in a FGD, 7 were using both the LS and the 3-stones, 1 household had never had a LS and 1 household changed the kitchen and had not yet reconstructed the LS. Based on consultants' observations made in ten homes in Nakaloke Town Council five (5) homes were cooking on charcoal stoves. In other homes active signs of the use of 3-stones were observed. In about seven (7) homes, one could hardly find any ash as evidence in the LSs, an indication that they had not been used in a long time. In one of the homes, the LS had a big hole, while in another, the LS was being used as seats by children.
This is despite the fact that this area has the best LS, the constructor resides in the area and commands a lot of respect among the women in that Town Council, but inconsistent use of the LS was an issue.

A number of reasons for the differential utilization were advanced by respondents as follows:

- In the season of maize, when the LS is being used to cook the main meal, mothers encourage the children to make their own fire using the 3-stones and roast maize to avoid being disturbed. There is also a mind-set that it is difficult to roast maize on LS without a wire mesh, hence preference of the tradition three stones or ordinary charcoal stove for the purpose of maize roasting. This however, is not correct because beneficiaries in Namatsale are able to roast maize without a wire mesh. *This indicates that the sensitisation done by some of the IPs was not sufficient.* Along with this, is the very low budgetary allocation of 1% towards sensitisation activities for adoption of fuel saving stoves as was seen in MEACCE. On the other hand it could be said that some IPs were not strategic/ innovative in passing on the message and they need to learn from Namatsale community.

- Some beneficiaries are still in the process of upgrading their homesteads. Where some have kitchens that are not of the desired standards, once they save some money, they want to build new kitchens. While this is a positive step, given that the LS are not moveable, they get destroyed in the process of pulling down the old kitchens.

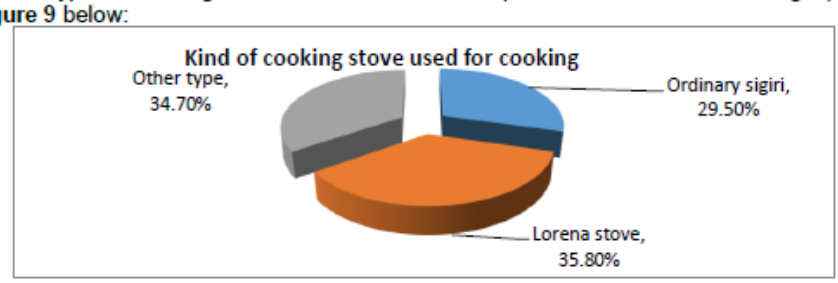
- In some homes, kitchens are used as stores for un-threshed maize after harvesting. In so doing, the LS become inaccessible and in some cases they get damaged.

- Some women pointed out that after threshing maize, they have a lot of maize cobs for which they do not see any other benefit apart from using them for cooking in the traditional 3 stone cooking places. This remains a gap in sensitization since the maize cobs can be used in the LS as well. In

addition, community members need to be sensitised about the use of pounded maize cobs for preserving maize grains from weevils as one of the ways for ensuring food security.

- Some of the LSs were constructed using sandy soils. This compromises their durability. In addition, the LSs are not regularly maintained. The owners most times wait for the LS constructor to do minor repairs. By the time this is done, the damage is already big and the LSs have been abandoned. There is need to conduct more sensitization of the beneficiaries to deeply understand the multiple benefits of using LSs for households as opposed to viewing the usage as if only benefits the MTPP.

Given the above challenges, it is not surprising that the average usage of Lorena Stoves based on the household questionnaires is at 35.8%, while the use of the unimproved charcoal stove is 29.5% and other types of cooking methods account for 34.7% (which included 1% who use gas) as shown in **figure 9** below:



In respect of effectiveness, Namatsale village under BRDC and Bunanimi under SAO have done well in promoting LSs. They used the strategy of tagging access to seedlings with construction of LS and its consistent use which is always monitored by the facilitators. Regarding the ACE Stoves, there is a misconception by some of the beneficiaries that these stoves are not appropriate for environmental protection. They claim that the technology uses a lot of charcoal for cooking. These beneficiaries have resorted to using the ACE Stoves for only lighting and phone charging.

However, it was discovered that this was caused by incorrect usage. Once the fire has been well lit, the speed of the fan should be reduced using the knob. From the explanation of some of the users, they usually forget to reduce the speed of the fan. This therefore points to the fact that training in use of the ACE stove was not well understood and possibly a refresher course should be done for all the people who were given those stoves. The above notwithstanding, all beneficiaries agreed that ACE Stoves cannot easily cook traditional foods such as dry beans and Matooke wrapped in banana leaves, yet, these are some of the major foods in this region.

Where the LSs have been consistently used, the amount of fuel wood used was reported to have reduced by a factor of 3 (three). This means that the amount of fuel wood that would be used to cook one meal is able to cook three meals. This has many positive outcomes even for the very poor households that have not planted trees due to lack of land. Such households are able to use less time going to look for firewood. Generally for all households where LSs have been constructed, the advantages of ease in cooking due to reduced smoke and cooking different foods simultaneously using only one source of fire are greatly appreciated.

Quantitative data at household level, showed that 33.1% use charcoal for cooking. Although charcoal burning in this sub-region is minimal. From the household questionnaires, 0.5% of the respondents (1 person) used to burn charcoal before the programme started. Currently, 1.0% of the respondents derive their income from charcoal burning. In the districts visited during the evaluation, the consultants did not come across evidence of charcoal sale in big sacks by the road side as the case is in Karamoja and other regions of Uganda. This observation was corroborated by at least five key informants including the Regional Traffic Police Officer of Mbale who said that almost all the charcoal sold in Mbale is got from Karamoja and Amuria district of Teso. The main reason for this is that the trees that make good charcoal are *Acacia spp* and *Albizia*. These are not readily available in this Mount Elgon sub-region. While the programme has been giving out *Albizia* seedlings these are usually few and they are used

for agro-forestry. The farmers who have planted them as shade tree for their crops cannot allow anybody to cut them down for charcoal burning.

Sale of firewood: There are some households that sell firewood to schools, restaurants and factories. In Busiu sub-county, there are two factories that use the 3-stones cooking technique to boil ingredients for making the drinks, hence consuming a lot of wood. These factories have no fuel saving technology and are likely to reverse the gains made under the programme, if total dependence of fuel wood is not checked. This opinion is informed by the observations made at two different factories where a truck-full of wood was being offloaded at one factory, while a lot of wood was being used to boil the ingredients in another factory as shown in the photographs below:

Fuel wood being offloaded at a factory in Busiu sub-county

Preparation of the energy drink using the 3-stone cooking method

Brick making and burning

Brick making is a lucrative business. Some bricks are sold as unburnt bricks but the burnt bricks have higher demand because they are more durable. Data from household questionnaires shows that before the programme started 2.9% of the respondents used to get their income from brick making and burning. This has increased to 4.2%. It is expected that this will increase even more because the demand for bricks will be higher as more buildings will be constructed to meet the needs of Mbale City.

4.0 Social changes attributed to the programme

Key informants opine that MTPP has helped to stabilize co-habiting arrangements by reducing women's feelings of exploitation and insecurity of tenure in quasi marriage arrangements. The laws in Uganda do not recognise co-habitation even when partners have lived together for ten years and above. Women in co-habitation are not motivated to engage in long term investments within their partners' homes. This is because when the co-habitation ends, women usually walk out empty handed irrespective of how much effort they have put in creating wealth with their male partners. Key informants in Bukalasi, Bududa district said that a lot of sensitisation has been conducted and this has made many women progressively take up tree planting.

Similarly, in Busiu sub-county the female TNBO, said that there are more women beneficiaries of tree planting than men. The reasons given were that: (i) women suffer the impact of firewood scarcity more than men (ii) the fact that the TNBO is a woman gave fellow women the necessary impetus to embrace MTPP. (iii) The TNBO has also mobilized fellow women for voluntary saving and loaning activities.

A rapid gender analysis made by the consultants coupled with their experience, shows that in some cases, women go to the tree nurseries, pick seedlings, plant them and look after the trees. When it is time to benefit from the trees, the men assume ownership. In the case of the MTTP, further probing revealed that majority of women are only benefitting from the "left overs". In many FGDs, it was explained that when the trees are cut for timber, the women get the left overs (branches) for use as firewood. The benefits that mostly accrue to women whether co-habiting or legally married are for meeting their reproductive roles of cooking and getting herbal medicine (health care). The bigger part of the cash economy in tree planting still remains under the ownership and control of men.

The situation is usually different for widows and single mothers because they are the decision makers, especially when their male children are still young. Once they grow into men, they take over the control

from their mothers. While the women are participating, there is no deliberate strategy to ensure that they get the right information in a timely manner, get the seedlings of their choice based on informed decisions and are not strategically supported to enable them overcome barriers that hinder them from equitable sharing of tree planting benefits. The upcoming programme should deliberately design a gender transformative strategy that spells out key aspects for mobilizing women effective participation.

Quantitative data shows disability as one of the reasons why 5.3% of respondents had either planted very few trees or none at all (*refer to figure 5*). Some of these respondents have land but were unable to plant because they lacked labour. On a positive note however, the team interacted with a respondent who got the disability when he was already working as a TNBO. This person was doing the nursery work with his wife and was getting the same benefits as other TNBO[2]. The other respondent of interest was a 95 year-old retired civil servant, who lost his sight due to age. This particular respondent is a well-to-do person, he owns big woodlots and has encouraged each of his children to plant his/ her own trees.

What was clear in the evaluation is that the people who got disabilities later in life are doing far much better than those who were born with disabilities or got disability-related challenges early in life. The consultants believe that PWDs who cannot substantially benefit from the programme exist in the community. This is based on the percentage of PWDs in this sub-region that is higher than the national average. It is important to note that the percentage of females with disabilities is higher than for males with disabilities as seen in table 6 below: (Source: UBOS, 2019: National Analytical Report on persons with disabilities).

Area	Visual Impairment (%)		Hearing Impairment (%)		Difficulty in Walking (%)		Remembering Impairment (%)		Any other impairment (%)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Elgon sub-region	6.6	8.6	3.6	4.5	5.6	7.9	7.1	9.1	13.9	16.6
National Total	5.4	7.4	2.8	3.8	4.0	5.8	4.7	6.7	10.7	13.5

The gender transformative strategy whose development is being emphasised should include deliberate actions to target inclusive participation through social mobilization of communities to support the elderly, PWDs and people living with HIV and Aids (PLWHAs) in tree planting. Such support, can build on the modus operandi in Namatsale where community members get together to dig up and destroy anthills in their locality. Such a model can be further explored with possibilities of supporting vulnerable people. It should be noted that community support for vulnerable persons was a traditional practice, where community members would support the vulnerable by performing chores such as fetching water and firewood on voluntary basis.

In respect of household relations between beneficiaries, consultants were informed that there is increased disclosure of the stipend earned by TNBOs to their spouses. Initially, male TNBOs were silent about whether they were working as volunteers or given a stipend. Moreover, the male TNBO expected their wives to do some of the tree nursery activities. At the end of the month, the male TNBOs would get UGX 100,000 and keep quiet. Their wives felt that they were being exploited and developed dislike for the nursery work and the entire programme (Source: Project Officer METGE). This however, has been changing because TNBOs have been sensitised and others learnt the hard way when they left their homes for a few weeks and found the seedlings had dried because their spouses were not interested in watering them. Currently, sharing information between TNBOs and their spouses especially about the monthly stipend has improved. This has led to increased sharing of workload, joint planning and decision making for utilization of house hold incomes.

There is improved sanitation and hygiene within the homesteads of TNBOs. This has come about due to a modus operandi of holding meetings for TNBOs on a rotation basis at the respective nurseries. Out of the fear of embarrassment from peers, TNBOs started improving their homesteads. Given that

[2] Sadly, information received on 24th September 2020, indicated that he had passed on, on 19th September 2020.

there was a constant cash flow of monthly stipend, (however modest it was initially) it enabled them to put in place some basic requirements of a good home. For example the TNBOs who did not have proper latrines constructed them, others bought chairs and made a provision for keeping safe the drinking water using the traditional pots. In addition, participation in the programme had increased social networking, enabled beneficiaries to make new friends and learn from each other.

Under SAO, there has been strong collaboration with the local government. Community sensitization is done jointly by the IP staff and the local council leaders. It was this strong collaboration that saw a bye-law enacted in Busiu sub-county that outlawed free-range grazing of livestock. This was done to enhance the survival rate of trees that were being damaged by unattended to livestock.

Cultural benefits that have accrued as a result of the programme: The Mbale Tree Planting Programme has been very unique. One of the tree species raised is the *Markhamia lutea*, a tree that has a direct relation and value to the Bamasaaba culture. In this culture, every male youth is supposed to be initiated into adulthood through an act of circumcision. This is usually accompanied by merry making through singing, dancing and eating. During the male circumcision ritual, every male candidate for circumcision requires one *Markhamia lutea* pole and a stick. This event offers a platform for the male youth to publically show the girl he intends to marry. This is done by handing a stick to the girl. The *Markhamia lutea* stick is therefore synonymous with an engagement ring in the Western culture.

It should be noted that, under Comprehensive HIV Prevention Programme in Uganda, safe voluntary medical male circumcision for adolescent boys and men is promoted because of the health benefits it offers. The difference however, is that cultural circumcision is not done under the supervision of a medical staff. Before the MTPP, *Markhamia lutea* had become very scarce. Candidates for circumcision would walk very long distances to look for the *Markhamia lutea* poles and sticks. There are instances where some boys would be caught stealing poles from other people's gardens and would be punished. Currently every household has planted *Markhamia lutea*.

In addition, this tree is used during burial ceremonies for all Bamasaaba irrespective of religious belief. Before the grave is covered, some pieces of *Markhamia* are put on top of the coffin or where the head will be laid in case of the Muslims. It is strongly believed that no Mumasaaba can be buried without *Markhamia lutea*.

Differences in benefits accrued from the programme: Tree planting needs land. Around Mount Elgon sub-region land is mostly owned by men and in some cases widows. The male children can access land from their fathers and some of them have taken up tree planting. However, very rarely do daughters plant their own trees in their parents' homes. Married women get benefits such as firewood from the tree prunnings. Women and girls have also benefitted from the adoption of Lorena Stoves hence making their gender role of cooking food a lot easier and healthier. The evaluation did not go deeper into gender analysis of decision making and control of resources and benefits at household level. It is the opinion of the consultants that this kind of analysis should be done during the process of developing a Gender Transformative Strategy. However, in the meantime MTPP can explore a possibility of supporting women and youth groups to engage with the District Local Government and NFA to secure access rights in Local and Central Forest Reserves for planting trees. This is one of the ways in which vulnerable groups that have no access to land can be enabled to plant trees.

Impact at school level

Before the programme, St. Kizito Catholic Primary School commonly known as Biraha Primary School, had only two mango trees in the school land. The school administration took up fruit tree planting passionately. At first they faced the challenge of livestock damaging the trees. The school administration took a decision to hire a security guard who would be on the look-out for any trespassing livestock. In addition, a banana plantation for both fruit bananas and green bananas for cooking was established, within which fruit trees were planted. The banana plantation is doing well and harvesting has started. At the same time, the fruit trees are growing very well. The school has started increasing the acreage of bananas using banana suckers from the old plantation. By the time of the evaluation, the school had approximately two and a half (2½) acres of bananas intercropped with fruit trees. The

strategy of planting bananas in Biraha has not only provided protection to the trees from damage by livestock but has also become a major source of food for a number of school pupils and teachers.

Provision of extra space for effective learning. In St. Kizito Catholic P.S. Biraha, there are over 200 pupils in primary four. These cannot fit in one classroom. The school administration took a decision that the pupils in the lower classes especially P.1 be taught under the trees so that their classrooms can be used to reduce the congestion of the pupils in P.4. Similarly, the staff room was converted into an office for the Director of Studies and the Stockiest because the teachers prefer to spend their free time under the shade.

In Watzemba, Kolony and Biraha primary schools, the fruit trees that were planted earlier have already matured and they provide fruits to pupils and staff. The fruit trees have been useful to the schools in the following ways: During the fruiting season, the pupils keep within the school premises as they eat the fruits. This reduces loitering of pupils in trading centres from where pupils learn bad habits. Some of the parents have found this very helpful because their children do not have to walk back home for lunch thus keeping time for the after-lunch classes. Further, mothers can spend longer hours working in the gardens since there is no need of rushing back home to prepare lunch for the school pupils.

The prunnings from the school trees are used for making porridge for pupils at break time and meals for teachers. Before the programme, pupils would be required to bring firewood from their homes, which was very tedious.

The greening programme has raised the profile of St. Kizito Catholic Primary School Biraha in a way that teachers no longer have the negative perception as it used to be when transferred to the school. Such benefits were not envisaged at the time of planting.

On the contrary, Magoma Primary School has performed very badly amongst all the schools visited. Only one tree planted under the MTPP could be located in the school premises. The major challenge is livestock grazing. The staff of Salem Brotherhood need to engage the School Management Committee to devise measures of ensuring that the trees planted in the next programme 25:25 are well looked after to ensure their survival.

5.0 STRATEGIES THAT HAVE YIELDED SUPERIOR RESULTS FOR SCALING UP AND REPLICATION

Planting shade trees in coffee plantations: Planting shade trees in coffee plantations has been very impressive both to the farmers and the staff of METGE in as far as it increases coffee productivity and quality. Farmers who planted shade trees in coffee plantations have increased productivity by 150%. The study findings indicate that growing coffee under tree shade is among the prominent agronomic practices in traditional organic coffee growing systems. Growing coffee under tree shade provides ideal microclimate for growth and production of coffee by damping the diurnal ambient air temperature oscillations. The system is also an ideal way of organic farming as the leaf and other falls of the tree shade add to the organic matter content of the soil by contributing organic biomass to the litter. As a biological soil and water conservation mechanism, shade trees also minimize soil and water erosion by reducing the intensity of rain reaching the ground. Apart from this, the deep root system of most trees helps to facilitate the filtration of rain water into the inner layers of the soil strata. This reduces surface run-off of rainwater and at the same time contributes to recharging the ground water. Shade trees likewise reduce evaporation from the land surface and evapotranspiration from plants.
One of the Programme Officers at METGE who hails from Kyenjojo district located 468 kms from Mbale has introduced planting of shade trees in his family Robusta Coffee Plantation. This is the first of its kind, because people had never known that Robusta coffee needs shade trees.

Planting bananas for shielding trees in school premises: All the schools visited were not fenced and therefore not well secured from grazing of livestock. Community members who own livestock

always look for open space where they can graze their animals. As long as the land has some crops, people who look after livestock take precautionary measures to ensure that crops are not destroyed. This enables seedlings to establish well and grow undisturbed, hence increasing the survival rate of trees. While MTPP had set out to encourage planting of shade trees to protect crops for increased productivity, the reverse has also proved true that perineal crops like bananas can be planted to protect trees when they are still young and vulnerable. Hence increasing the survival rate.

Planting trees in school compounds: This approach yielded multiple results. The trees provide shade for pupils, fruit trees contribute to the nutritional status of pupils, reduces pupils' mobility to the trading centres and bushes during break time to look for fruits and quick eats. Trees enhance the beauty of schools and act as a demonstration site for parents when they go to schools to attend parents' activities. The fact that children participate in tree planting at school, they are taught to understand environment management and climate change by their teachers, some of them have seen the ability of wind breakers in mitigation of strong winds and hailstorms, all these have motivated pupils to replicate tree planting in their parents' homes. In addition, the programme work in Biraha P.S became so impressive that the Catholic Church offered more land to the school to establish a woodlot. This has already grown.

Promoting different indigenous tree species: The tree species promoted under the programme were mostly indigenous, they were of different varieties and multiple uses. Promotion of medicinal tree species in Uganda where the government health care system is weak, helps families to have home-grown health care options. To some extent, TNBOs raise seedlings based on species preference of the respective communities. As such, the issue of "forcing" beneficiaries to plant trees that were not of their choice was not found and this is a positive aspect of the programme. In addition, planting indigenous trees has given opportunity to the households to build on indigenous knowledge.

Strengthening collaboration with government: In areas like Busiu, where the IP has worked closely with the local councils, it has been possible to develop a bye-law prohibiting free range grazing of livestock. This being a government bye-law, the possibility of it being enforced is higher compared to NGO community sensitization. This is because community members are heterogeneous. Some can respond to the sensitization messages but others need a law to encourage behaviour change.

Nurturing linkages with Uganda Coffee Development Authority (UCDA): Konokoyi Cooperative Society through the District Environment Officer of Bududa District took advantage of the opportunities in UCDA and became a certified coffee nursery bed operator. In the financial year 2018/ 2019, the cooperative supplied 150,000 seedlings earning the cooperative UGX. 52,500,000. Similarly, the nursery operator of Namatsale supplied 2,000 seedlings of coffee through one of the staff of Operation Wealth Creation.

Tagging tree planting to use of Lorena Stove: In Bunanimi community, promotion of the Lorena Stoves was done alongside tree planting. Every household that collected seedlings for planting was required to install a Lorena Stove. Similarly, every household that requested for Lorena Stove had to pick seedlings for planting. Hence increased adoption of the Lorena Stove. This partly explains why more women picked seedlings from the nurseries.

Targeting a cross-section of different age groups: At the beginning of the project older people especially men were targeted. This was because men own land and nothing can be introduced unless there is buy-in from the land owners. As the programme advanced, other groups such as youths were brought on board. Currently tree growers are aged between 16 years and above. The 16 year old tree growers have the potential of planting trees for the next 70 years till they are 86 years old. This is part of a sustainability strategy. It should be pointed out that the consultants did not come across many strategies for targeting women apart from use of the Lorena Stoves and the introduction of voluntary saving and loaning associations (VSLAs) which is still at the nascent stage.

6.0 CHALLENGES

This evaluation was conducted in early August 2020 during the time of COVID -19 pandemic. By that time, there was no serious impact of COVID -19 pandemic on the programme. This could have been because Uganda had not been affected by the pandemic to alarming levels. Only two people had been reported dead due to COVID -19 pandemic in the whole country. The situation was almost as usual save for water and soap for hand washing that had been provided at the nurseries. The other Standard Operating Procedures of Ministry of Heathy were not being followed at the nurseries and by most community members. For example only one of the TNBOs had a mask but not the women who were found potting. In addition, the potting women were not keeping social distance.

Given the changing situation of COVID -19 pandemic, where Uganda had over 64 death as at 23rd September 2020, it is important that the IPs get the Standing Operating Procedures from COVID -19 District Task Forces, conduct community sensitization, ensure that only people with masks come close to the tree nurseries to pick seedlings and also keep social distance. On a strategic note, the IPs should use COVID-19 pandemic as an opportunity to step-up hand washing after use of toilet especially in schools.

6.1 Programmatic Challenges

There are some pests and diseases that attack trees thus affecting the survival rate. For example, oranges are attached by aphids causing a sooty mould. *Grevillea robusta* is vulnerable to attack by fungal diseases such as *Corticium salmoniclor*. Fungi such as *Amphichaeta grevillea*, *Cercospora spp*. and *Phyllostica spp*. have been observed to cause considerable damage to leaves and stems of young *Grevillea robusta* plants particularly if they are overwatered in the nursery. Attack by termites is also a problem when planted in dry areas. Young *Maesopsis eminii* are prone to cankers caused by fungi such as *Fusarium solani*. (Source: Eco-trust. Trees for Global benefits 2020).

The programme offered limited options for integrated livelihoods apart from the coffee cooperatives. Farmers/ beneficiaries who took trees for planting in 2010, were made to sign memorandum of understanding (MoU) that they would not cut down the trees until after 15 years, this did not materialize. Most of them cut down the trees and got firewood for sale to hotels and schools. The main reason advanced for violating the MoU was the lack of alternative sources of income. *"My child fell sick and I desperately needed money for medical care, I had no choice but to sell." "My children were sent away from school because I had not paid the money demanded by the school. I could not see my child miss a year when I had trees on my land."* These are some of the statements that were echoed in the focus group discussions. This shows that many tree farmers do not have diverse sources of income to meet their day to day financial needs.

It would be important to link up with other organizations working in the region and focusing on livelihoods. Some of these are: ECOTRUST that is implementing the Trees for Global Benefit; Japan International Cooperation Agency and MAAIF in collaboration with the District Local Governments are implementing the Northern Uganda Farmers' Livelihood Improvement Project that also targets Mbale, Bulambuli and Sironko Districts. Other players supporting livelihoods are: The Trees for Food Security (T4FS) project of ICRAF / NaFORRI; JENGA Community Development Approach, a Christian Non-governmental Organization that provides the basic essentials of life to the most vulnerable people of Mbale, Uganda. This organization has diverse and sustainable development projects that equip Ugandans to meet their own needs and bring about change to their communities. It would also be important for the staff of MTPP to strengthen their links with the District leadership so that when new actors come to the districts, they can be directed to work with MTPP.

Bee keeping has not realized the anticipated financial benefits because the beneficiaries of Sunu village were not sufficiently trained in bee keeping. The ones of Kolony have faced issues of unsecured place for bee keeping and limited availability of knowledgeable people for harvesting. Further, there is a high level of agrochemical application especially by the vegetable growers. These chemicals are not bee-friendly and they make bees migrate to other areas. The SAO staff have tried to encourage farmers to use organic pesticides but intense sensitization needs to be done for people to adopt use of organic products.

Weak or non-existent strategic linkages with other climate action players and government programme implementers such as ECO-Trust, IUCN, TRC, UCDA and OWC. The UCDA was buying coffee seedlings from certified nursery operators but only one out of 33 nurseries at the time benefitted from the initiative, yet the process of certification was not tedious. Given the very high levels of nursery management practices that were observed in all nurseries under the programme, all of them would have qualified. Similarly, there have been many opportunities under OWC of buying grafted fruit tree seedlings. The nurseries under the programme were not among the suppliers of OWC. In future, the programme staff should be vigilant in looking out for other projects to complement the efforts of the tree planting programme and leverage benefits.

The programme lacks harmonized and documented guidelines for good tree planting and management practices such as recommended spacing for different species, pruning and thinning regimes and sustainable harvesting of raw materials for medicines. In addition, it was established that there is a level of information distortion from METGE through the communication chain to the beneficiaries. For example, when METGE communicated to the IPs to encourage the farmers to form VSLAs, some nursery operators construed that to mean that whoever does not become a VSLA member, s/he would not be allowed to access seedlings. As a result, some of the farmers especially women who thought that they would not manage to make weekly savings were afraid of going to the nurseries to pick seedlings for planting.

Closely linked to this, when the decision to geographically zone operations of IPs was made, it was not explained to the nursery operators that were affected by the change. An example is a beneficiary from Namabasa Sub-county who was a nursery operator under BRDC. He pointed out that he got a letter telling him that he was no longer one of the nursery operators without preparing him for exit. This made him think that his work was not appreciated and was left with "a wounded heart". He has however continued operating the nursery at a small scale. This calls for putting in place an exit strategy that prepares beneficiaries psychologically.

Some of the community members do not go to pick seedlings from the nursery but are quick to uproot what their neighbours have planted and they take those seedlings to plant in their own gardens. The reason given was that some of the community members are not sure that they can get seedlings free of charge. This again raises the issue of effective communication and awareness raising about the programme.

Inconsistent use of the fuel saving cooking technology and a low budget allocation of 1% which does not permit intense sensitization of communities. There is a lot of dependence on the Lorena Stove constructors to make minor repairs which is not a good indicator for ownership. Even so, most beneficiaries do not feel the urgency to call the LS constructors and possibly give him/ her transport to come and repair. The beneficiaries want everything to be done by the programme free of charge.

Gaps in monitoring by implementing partners. The templates used for recording the number of seedlings delivered were not detailed enough to facilitate effective and efficient monitoring. As such tracing beneficiaries has been an uphill task until recently when the templates were amended. There was no proper mechanism for follow-up to ascertain that all the seedlings taken by individuals / groups were planted. Beneficiaries would ask for very many seedlings and they would be given without accessing the capacity of the individual beneficiaries in terms of availability of land and labor for planting the seedlings in time. As such some of the seedlings dried up. This has recently been rectified through beneficiary capacity assessment before giving out seedlings and currently, only a maximum of 200 seedlings are given at a time, except in special cases where farmer capacity is not doubted.

Monitoring is further complicated by the difficult land terrain. In the rainy season, some geographical areas become hard to reach. This is further complicated by the frequent landslides in the region that have not yet been properly managed. Some of the farmers are suspicious and do not want the staff from IPs to take photos and map their tree plantations. They fear that this is a ploy to steal their land. This is not an unfounded fear because land grabbing has become very common in Uganda. It is

therefore important that the purpose of GIS mapping of trees is well explained to secure confidence and trust of the farmers.

Communication and Visibility: This programme has made great contribution to the Government of Uganda given the very high number of trees that have been planted. While the project benefits are very visible on ground, the visibility at national level is low. This makes MTPP, Size of Wales and the Welsh Government's efforts in climate action unknown by many stakeholders. It is important to make this contribution more visible. This should be through METGE subscribing for membership to the Environment and Natural Resources CSO Network. The network compiles annual contributions of CSOs that subsequently gets reflected in the MWE Sector Performance Report.

Lack of an organizational strategic plan for harmonization of all programme components and a guiding document for gender transformation and social inclusion. Every IP is trying to integrate gender from their own understanding and misconceptions about gender.

Free range grazing of livestock especially after harvest and during dry seasons results into animals damaging the newly planted seedlings and young trees. This calls for advocacy for enactment of bye-laws regulating free range grazing as was done in Busiu sub-county. The restriction of free range livestock grazing does not necessarily infringe on the rights of pastoralists because Mbale sub-region is predominantly a crop farming community.

Unauthorized and unsustainable harvest of medicinal roots/ tree barks: There are some community members who have understood the medicinal benefits of trees but are not harvesting in a sustainable way. Moreover such people harvest from tree plantations which they do not own. They are not mindful of whether the trees from which they harvest will survive or die. This observation was made at Watzemba Primary School and in a woodlot of one beneficiary. This was further confirmed by respondents of the FGD held near Saleem Brotherhood Offices. They pointed out that poor harvesting of raw materials for medicinal purposes done without permission from the tree owners was damaging trees. This group requested for further awareness raising and training of communities in sustainable medicinal harvesting from the planted trees. Below are some pictures of unsustainable root harvesting that were taken from two different places.

Left: Poor Root harvesting in a beneficiaries woodlot

Right: root harvesting at Watzemba P.S.

7.0 SUSTAINABILITY

There is a high possibility that the net benefits of the programme will continue once the programme has ended as discussed below:

Shade trees, fruit trees and wind breakers planted in schools: The benefits of trees (for shade, fruits and weather mitigation) are immense both within homes and in schools. This region is prune to frequent storms and strong winds. People in this region have bitter experiential learning caused by effects of climate change. In 2014 and 2017 the raging wind and storms left most people homeless, places of worship and schools destroyed. Having successfully mitigated these risks by the presence of wind breakers, it is unlikely that beneficiaries will fail to maintain their homes and schools surrounded

by wind breakers. Fruit trees will also be maintained in schools because they keep children nourished during the peak seasons. The children, the teachers and the parents have all benefitted from the fruit trees, they may not allow cutting down of trees. In addition, the indigenous Mangoes, Jackfruit and Jambula do not need to be cut and replaced. If untampered with, they can grow as long as life is.

The shade trees for coffee will continue to be maintained and others planted because coffee farmers have seen the benefits. Coffee is not a food crop but cash crop grown to get money. The coffee farmers have minds of entrepreneurs and will sustain any strategy that helps them to earn more money due to increased yields and improved quality of coffee. Replication of this practice has already begun beyond the geographical area of focus. It's important that the programme documents this significant change and lessons learnt from the beneficiaries.

Sustainability of nurseries: The coffee cooperatives under MEACCE are willing to take over the tree nurseries. The coffee farmers have realized that productivity of coffee increases when shade trees are intercropped within the coffee plantations such farmers will always sustain the net benefits of the programme. It should also be pointed out that some of the coffee cooperatives had started tree nursery management for coffee seedlings long before the MTPP started. These will continue with tree nursery management. In addition, the knowledge and skills acquired by TNBOs and members of their households will continue to partly support tree planting.
However, the tree nurseries under other IPs (SAB, SAO and BRDC) will meet some challenges. This is based on the finding that in 2020, six (6) out of the 39 TNBOs were stopped. The 6 tree nurseries were handed over to the communities. Four (4) of these are no-longer in operation at all, while the two that are still functional operate at minimal capacity. Continued functionality of the two is made possible by the operators getting potting bags from some IPs but the responsibility of managing the tree nursery majorly lies with the former TNBOs and not community members as envisaged. The question is, for how long will this be possible, if the tree nurseries continue giving free seedlings? The issue of community involved should be carefully thought through during the exit strategy.

The issue of community members volunteering to perform some tasks at the tree nurseries is not cross-cutting. It was only observed at Namatsale tree nursery. It should be recalled that at the start of the programme, the tree nurseries were a responsibility of group members. Later, some people were selected to become TNBOs and they started getting a monthly stipend. In most groups, the members stopped volunteering. They opined that the person who is paid should do all the nursery work. Therefore, when the tree nursery ceases to be under the programme it will be difficult for the members to own the nursery operations and resume their voluntary work unless they are well sensitized ahead of time.

Availability of seeds for planting: Some of the trees planted at the beginning of the programme have started generating seed and local seed collection has started. When there is a demand for some seedlings that are not in the nursery, community members collect local seed and take it for raising in the nursery. At Namatsale tree nursery, community members had a demand for planting coconut and some members collected the seeds. This approach will facilitate availability of seed for tree nurseries. However, the cost of potting bags is quite high, unless the seedlings that will be raised will be sold at a modest fee to recover the operational costs.

As long as the Bamasaaba culture lives, the *Markhamia lutea* will always be protected.

The sustainability of Lorena Stove usage will be high in some areas and low in others. In areas where many people were trained to construct Lorena Stoves, the issue of maintenance will be managed. However, in areas that are dependent on only a few people who are able to construct the LS and the users are not able to do minor maintenance by themselves will have challenges. The tendency of parents allowing their children to roast maize on the 3-stone cooking place will make such children unable to value to the Lorena Stoves. The total dependence on the programme to pay for construction of the Lorena Stoves will negatively impact on sustainability. This was confirmed by one of the constructors who said that the people she constructs the Lorena Stove for do not even give her a person to help her move the soil as she constructs. How then can they cater for her labour in the event that the programme has ended?

There is a high possibility that the drink-making factories in the region will deplete the fuel wood, unless the factories introduce energy saving technologies or clean energy. In addition, the issue of brick burning that is quite high especially in Nakaloke will deplete the fuel wood. This is a threat given that there is going to be increased construction in Mbale because of the City Status it assumed with effect from 1st July 2020. It may be important to train the youth in making concrete blocks to reduce the demand for burnt bricks.

8.0 LESSONS LEARNT

- It is important to get a strategy for re-cycling the plastic seedling pots after planting. This can be done by ensuring that beneficiaries return all empty plastic pots to the nursery operator after planting.
- There is a symbiotic relationship between culture and the environment. "You destroy the environment, you lose your culture."
- The longer the duration of the project and sustained engagement with the communities, the greater the impact.
- The old adage that "easy come, easy go." There is limited value attached to something that has not been hard earned. The ownership approach where beneficiaries contribute towards payment for construction of Lorena Stoves needs to be thought about to make LS more valued. There is need to mobilise the LS constructors into a business team that can be organised to construct stoves at a fee. This approach is already being promoted in Western Uganda.

9.0 CONCLUSION

Based upon the household survey conducted in 207 households, the interviews with key informants, FGDs, the field observations conducted in sub counties of Bulambuli, Bududa and Mbale districts, the consultants commend MTPP for immense work done in tree planting. The programme is commended for the excellent tree nursery management practices. The tree nurseries are clean, no weeds around them, they are well sheltered, with a wide range of seedling varieties and no over- grown seedlings in the tree nurseries. What stands out as programme achievements include: the level of awareness and acceptability of agroforestry practices; the appreciation of agro forestry species and planting that is evident in gardens; increased crop yields; improved food security and diversity; and the cross-generational targeting of beneficiaries. In the homes where the Lorena stove is adopted, the usage is a positive aspect that relieves women of effects of the traditional 3-stone cooking that requires use of a lot of fuel wood accompanied by smoke. Based upon the past experience of the consultants in implementing and assessing similar or related projects, the MTPP stand out on planting trees that will provide energy security for households.

The story is incomplete if no mention is made of the tremendous achievements in mitigating strong winds and heavy storms due to presence of wind breakers. This impact is likened to the infant school song **"the Wiseman who built his house upon the Rock."** It is not over, the unintended positive impact from shade and fruit trees can be summed as follows: "*Oh trees, you fill my mouth with sweetness, you nourish my body and my face glows like the sun.* Why *then would I rush back home for lunch, to bother my mother who is already over-burdened with gardening? I would rather relax under your shade, protected from the snakes that would, but harm as I wander in the bush looking for fruit. For all this I will always protect you from the raging axe"*

10.0 RECOMMENDATIONS

The recommendations described below have been categorised in the short, medium and long term. MTPP may not implement all of them, but it is hoped that other like-minded organisation can pick interest in the ones that will not be implemented under the 25:25 forthcoming programme.

Short term

(1) Nurturing strategic linkages
A number of other climate action players and organizations focusing on livelihoods and climate change exist at sub-regional and national levels which MTPP could link with. Notable among them are: ECO-TRUST for Voluntary Carbon Market (VCM) and Tree Resource Centre (TRC). Some farmers and nursery operators should be linked to TRC for training on seed harvesting and handling so that they can become certified seed suppliers. This would facilitate creation of community seed banks, reduce the dependence on MTPP funds for procuring seed. In addition, the Seed Centre under the National Forest Authority should also be engaged to explore if it can buy seed from the farmers under MTPP. In this case, farmers will be more interested in planting more trees, maintaining mother gardens and they will realize more commercial value from older trees. Other linkages can be explored with the OWC, NUSAF 111 and NaFORRI whose emphasis is on food security.

(2) Subscription to a National Network
METGE should explore membership with the Environment and Natural Resources CSO Network to allow for participation in the annual Joint Sector Review Process (JSR) under the Ministry of Water and Environment (MWE). The network provides a learning platform, amplifies advocacy issues from the districts to national level and ensures that the contribution of different CSOs is captured in the MWE annual reports. At the local level, the IPs can explore participating in sub-county/ district council technical planning committees where programme staff and key farmers can be invited to participate.

(3) Development of materials and documents
With support from Size of Wales, METGE should develop the following: (i) IEC materials on the benefits of using Lorena Stove; (ii) Uses of the tree species promoted by the programme; (iii) Tree planting and management guidelines; (iv) METGE Organisational Strategic Plan and (v) Gender Transformative Strategy, informed by a deliberate gender analysis should be developed to guide all the IPs. This has been arrived at based on the findings that some of the IPs are gender blind and confirmed by the very low percentages of women TNBOs and facilitators as well as the unintended exclusion of persons with disabilities and lack of a deliberate effort to bring them on board. ***At minimum a gender mainstreaming training can be conducted for all the staff of MTPP to engender the planning and implementation of interventions***. Engendering the programme would also help to overcome the leakages in the coffee value chain, increase the capacity of women to make decisions on programme benefits, handle teenage pregnancy and deal with gender based violence which was pointed as a big concern by the Local Council Chairperson of Sunu Village.
All IEC materials should be translated in Lumasaaba language.
(4) Scale up the institutional tree planting programme and widen the scope to cover both schools and health centres.

(5) Exposure visits for bee keepers
Organize field exposure visits for staff of implementing partners and some bee keeping beneficiaries to Matiri Natural Resources Users Group in Kyenjojo one of the CBO that have registered success in Bee keeping, honey processing and Climate Smart Agriculture. If the production increases and is commercially viable, the group can be linked to an internal/ external market for export as organic or fair trade honey to Wales.

Medium term

(1) Slope Stabilisation and river bank protection
Prioritize activities for slope stabilization and river bank protection in the region considering the fragile ecosystem of Bududa, Bulambuli and parts of Mbale that frequently experiences landslides and floods. This means that the programme can explore linking tree planting activities from the understanding of Disaster Risk reduction lens.

(2) Business approach to the Lorena Stove promotion
A business model should be inbuilt into the programme results chain especially in training stove constructors as entrepreneurs. These should be supported with awareness materials that highlight

the benefits of Lorena Stoves and trained in how to advertise their skill. They can thereafter construct the stoves at a fee paid by households. However, the programme should continue paying for stove construction for very poor households or households where there are people living with disabilities.

(3) Step up Sensitisation on Lorena Stoves
Intensify sensitization on use of Lorena stove in order to enhance adoption and consistent use. Community members Bunanimi requested to have more households trained in stove construction so that they are able to undertake simple maintenance own their own.

(4) Harmonisation of communication
Development of harmonized messages to promote the programme would be a good idea that can provide consistence in messaging and branding across the programme partners. This could be in form of brochures, leaflets and messages on: the recommended spacing for different tree species for timber, wood fuel, and good agronomical practices for intercropping among others. Messaging will therefore mitigate backlash on tree planting where some farmers who planted inappropriate trees within coffee and bananas are beginning to complain that intercropping is not good. While we recognize that there are some people who cannot read, the above strategy will enable the nursery operators, facilitators, teachers and champions to give consistent information during the sensitization sessions. In addition, the children of parents who cannot read will help to read for them.

Coupled with this should be instituting an appropriate feedback mechanisms in the programme where participants can share their concerns. This can be by putting a suggestion box on the sub-county headquarters.

(5) Alternative livelihoods
Integrate short term alternative livelihoods that can enable beneficiaries meet the household income needs in the short and medium terms. The implementing partners can undertake a rapid assessment to understand preferred livelihood options. During the evaluation, respondents proposed goat rearing that can be investigated further. Goat rearing can enhance integrated farming and supplement incomes. This can be done through BRDC which already has knowledge of goat multiplication. Goats are not only for economic purpose but also a source of respect in the community. In addition, goats can be easily converted into cash in case the owner has an urgent need for money. This will call for increasing tree species for fodder.

(6) Seedlings for live fencing such as Kiapple should be raised in the nurseries and made available to

community members and schools. Once the schools are fenced off, grazing in school premises will be minimized. In addition, fencing will secure the bee keeping enterprises in places such as Kolonyi where there are serious challenges of trespassing.

(7) Promotion of use of organic pesticides
Communities need to be sensitized in adoption of organic pesticides to address the issue pests that attack trees. The use of organic pesticides will also enhance peaceful co-existence of the bees and other crops, especially vegetables where application of inorganic pesticide is high. Similarly, communities should be trained in use of organic manure, the importance and added value of organic farming.

(8) Resilient cities
Explore integrating the key concepts of resilient cities. Mbale has been declared a city effective 1st July 2020. The physical planning may undo the gains made over time. The Programme should engage with stakeholders for a clean and greener city.

(9) Training of School teachers in nursery management
School teachers/ school management committees should be trained in nursery management, facilitated to open up nurseries within school premises and to develop a pupil-parent extension system. The school head-teachers interviewed strongly felt that they needed a holistic concept of tree growing that celebrates mindset and builds capacity of children to be ambassadors of climate change.

Long term

(1) Remuneration and welfare of staff
This should be should be critically assessed and matched with similar organizations to minimize staff turn-over. For very difficult areas, a hardship incentive should be added to the staff working in hard-to-reach areas. This should be done through a salary survey.

(2) Best Practice Awards
MTPP should organize competitions to recognize and award exemplary tree farmers and best performing schools with trophies as part of mobilization and awareness raising. This should be highly publicized through national media so that the contribution of MTPP and Size of Wales is known and other stakeholders can replicate the programme in other parts of Uganda.

(3) Advocacy
MTPP and IPs should advocate for enactment of a by-law in all the districts of Mount Elgon preventing people from harvesting medicines without the consent of the tree plantation owner. This should go hand-in-hand with sensitization on sustainable harvesting of herbal medicine. Further, MTPP should engage the factories making energy boost drinks to establish / devise ways of mitigating cutting down trees for firewood.

(4) Cost efficient technology
Provision of Treadle pumps for irrigation (manual pumps) as a cost efficient technology to help some of the TNBOs who have challenges of access to nearby water sources as it is in Sunu and Namatsale. This should be in addition to carts that are more automated than wheel barrows for delivering seedling by facilitators to distant areas particularly for roadside planting and other public places.

(5) Financial literacy
There is need for training in financial literacy and saving. Some of the groups are already saving and training can be a catalyst to ensure effective use of funds accrued from the programme benefits.

(6) Programme expansion to Awoja catchment
The forthcoming programme of 25:25 needs to expand to the districts of Bukedea, Ngora and Kumi. The reason for this is that these three districts are part of the Awoja catchment within the Kyoga Water Management Zone (KWMZ), situated in the eastern part of the zone abutting Mount Elgon. One of the strategic objectives is to mitigate and adapt to the impacts of droughts, floods, and landslides. The practice of tree planting is still low in these districts and they are close to Mount Elgon sub-region to cause unmanageable operational costs.

ANNEX I: CASE STUDIES / LIVED REALITY

CASE STUDY ONE: BANANA GROWING IN BUSIU

In some parts of Mount Elgon, there are many species of bananas. Some are for cooking, others are sweet bananas for fruits and others are for making local brew (alcohol). Ms. Jalia Dundu (*not real name*) was born in Bufukhula parish, Busiu sub-county, Mbale District, in a family of 16 children (10 males and 6 females).

During her early years, Busiu was a very dry area that grew maize, cassava, sweet potatoes, millet and beans as the major food crops. Banana growing was very rare and a few households that had pieces of land along the famous River Manafwa were the only ones that could grow bananas. This is her story.

"*In our home, our major food was maize meal (posho) from the maize that we always planted and harvested from our family gardens. We also had some cattle. As much as our main food was posho, our father did not like it. His favorite food was matooke, yet it was very scarce at home. My father used to give us money to buy a cluster of matooke. We had to cook the matooke sparingly and he would eat it alone. Even when some of us would have wanted to eat matooke, we could not afford that luxury.*

Towards the end of the year 2012, my family lost most of the cattle due to a disease that we could not identify at that time. However, they left us with a lot of manure in the former kraal. My parents then decided to start planting banana suckers in the former kraal areas which they intercropped with some trees to provide shade. Within less than two years, my family had lots of bananas for cooking and some of it would get ripe. Our neighbours borrowed a leaf. They would come home and ask my parents to give them a few banana suckers (plants) which they planted around their homesteads. By 2016, all the families in my village had bananas and the whole situation of food security and diversity improved."

This would not have been possible, if the farmers had not learnt from the Mbale Tree Planting Programme that intercropping shade trees with bananas protects them from the harsh weather. In my sub-county Busiu, the programme has contributed to improved weather conditions that favour growing of crops that could not be grown before."

END

CASE STUDY TWO: TREE PLANTING IN SCHOOLS

Mbale Tree Planting Programme (MTPP) had a school component whose specific objectives were to provide shade in school compounds, ensure availability of fruits for pupils while at school and mitigate strong winds and storms that are frequent in this region. The doubting Tomas, need to visit a few schools like Bumasikye Primary School in Busiu sub-county, Watzemba Primary School and St. Kiziito Catholic Primary School – Biraha in Namabasa sub-county, Mbale District. Before the project of tree planting started in these schools, they used to experience catastrophic winds and storms that would carry away the roofs of school buildings. At one point in Watzembe, the school kitchen and toilets were destroyed by the strong wind and reconstructed in different direction which was thought to be in a direction with less wind. This did not save the situation. The third time, the wind came the roofing materials of same buildings were again blown off. The school management committee became really desperate. The parents were not spared either. They kept contemplating which other schools they could take their children. During the period of despair, came in Saleem Brotherhood and Share an Opportunity under the MTPP. They "claimed" that they could offer a solution that was not costly. Most teachers and parents did not believe but the despair drove them to try and plant the trees as they had been advised.

The trees were planted and grew very fast as though they were chasing the speed of wind. Within three years, most of the trees were above seven feet in height. No sooner had the trees grown, that a very

heavy storm accompanied by strong wind came as though it was looking for its usual path. This time more determined to cause the worst havoc on the school buildings.

It was a school day. The pupils of Bumasikye C.O.U Primary School and their teachers all gathered in one building block which they thought was stronger than the rest. For two hours nobody could utter a word, all prayers were done silently. The rain finally subsided. The head teacher told all the pupils to remain in the building. She only moved out with a few teachers.

They moved around the whole school, to see if the worst had happened, to the teachers' houses or the nearby church but everything was intact except a few trees that had got broken. Their eyes started pooping with joy and disbelief at the same time. They went back and bid farewell to the pupils. The school administration held a briefing amongst themselves. They all agreed that the situation had only been saved by the trees. They resolved that they would always ensure that there are sufficient windbreaks in the school. Who would be surprised by the fact that the head teacher has requested to host a tree nursery within the school premises, so that the school continues to champion the tree planting agenda?

In the opposite direction of Bumasikye lies St. Kiziito Catholic Primary School – Biraha, a school with nine hundred seventy six pupils (976). For them the benefits are multi-faceted and way beyond their expectations. The wind breaks have done their work diligently and no more worries about stormy wind.

Biraha P.S has over 200 pupils in primary four. The over-crowdedness in P.4 is a result of Ministry of Education's Policy of teaching in Vernacular from P.1 – P.3 and switching to English when pupils join P.4. Most parents are against this policy because they want their children to start studying in English, as soon they enroll in schools. This Policy is currently working in Government schools but the Private schools teach in English right from children's nursery section The parents have gone around this by enrolling their children in private schools and when they complete P.3, they shift them to government schools. This is the reason that Biraha has very many pupils in P.4 compared to pupils in the lower classes.

The very good shade provided by the trees planted by the MTPP has enabled the school to manage this big number. The tree shade is providing space for the pupils in P.1 and P.2 to be taught under the trees. This frees space for the P.4 pupils so that they can be divided into two lots and use the classrooms for the P.1 or P.2. The P.4 pupils are therefore able to learn when they have sufficient space for them to concentrate.

Similarly, the teachers have found shades to be more refreshing than being crowded in the staffroom. The teachers took a decision to let the staffroom be converted into the Office of the Director of Studies and Stockist while the other teachers use the tree shades during breaks and lunch.
"The tree project has raised the profile of St. Kiziito Catholic Primary School – Biraha. It is now one of the schools most liked by teachers. Before the tree planting programme, whenever a teacher would be transferred to Biraha, it would be construed as a demotion. Currently teachers lobby to be transferred to Biraha" (source: Teacher in one of the schools).

END

CASE STUDY THREE: MAKING GOAT REARING POSSIBLE FOR FARMERS WITH LIMITED LAND IN MOUNT ELGON SUB-REGION

In Mount Elgon region a person owning goats is accorded honor and respected by community members. In addition goats can be easily converted to money through sale unlike cows. While cows are also of economic significance, when a family has a need for money, selling a cow means that you have done away with an equivalent of eight (8) goats and probably remained with no livestock at all. If a person has eight goats, s/he can sell only one, sort out a problem and still remain with seven goats. The respect that goes with owning a goat, prompted a friend of Mr. Matte (not real name), to give him one goat. Mr. Matte is physically challenged, but this has not in any way deterred him from doing his nursery work well because he is one of the tree nursery bed operators (TNBOs). Being a TNBO, he has been earning a monthly stipend which he saved and bought other goats. Like other community members he does not own a big piece of land which he can use to graze his goats. At the same time, he has to attend to the tree nursery and cannot afford to take the goats very far from his home. He therefore decided to construct a goat shade and rear the goats' in-doors. This has only been possible because of the Calliandra tree species which he planted under the Mount Elgon Tree Planting Programme. Mr. Matte's goats look health and he does not need to hire a person to take care of them. His family members are able to harvest Calliandra fodder and take to the goats. This kind of goat rearing has enabled Mr. Matte's family to keep good relations with the neighbors because his goats do not destroy people's gardens. When Mr. Matte has a financial need, he sells some of the goats as was the case when he sold eight goats to pay school fees for his senior four child. **(Link to the Clip).**

END

CASE STUDY FOUR: GOLDEN HEART AT A HOME IN THE FOREST: A LIFE STORY OF MAKABULI YUSUF

[redacted], 58 years of age is married to two wives and has eight (8) children. Before 1998, he worked as a trained security guard for the defunct Uganda Coffee Marketing Board (UCMB). When UCMB was privatised, he lost his job and went to settle in his home village of Namabasa in Mbale district. He used his savings to buy nine (9) acres of land and also inherited 17 acres from his parents. In 1999, [redacted]started planting fruit bananas (Bogoya) as one of the livelihood projects for his family. Later he joined Saleem Brotherhood as head of security. While at Saleem, he came to know that there were seedlings for sale. He brought some and started planting trees. In total he planted 800 seedlings of *Mango*, *Eucalyptus* and *Measopsis enimi* trees.

After a while, a programme under Territorial Approach to Climate Change (TACC) started and was housed at the premises of Saleem Brotherhood. Whenever, there was an activity related to tree planting,[redacted] would passionately participate. It was not long that his outstanding performance in mobilising community members and getting them interested in the programme of tree planting was noticed by the Programme Coordinator (PC) for Territorial Approach to Climate Change. With[redacted]s effort, community members started planting trees and this was made possible because the seedlings were given free of charge. [redacted]was also among the beneficiaries. He planted very many trees of different varieties ranging from fruit trees, tress for construction, trees for medicine and food security. When the PC was leaving Uganda, she recommended that [redacted] be moved to the tree planting department. This however, did not take immediate effect.

Almost during the same time, another volunteer with Peace Corps came to Saleem Brotherhood to implement a certain project. Very quickly, [redacted] proved his mobilisation skills which contributed to the success of the Peace Corps' project that achieved 98% of their targets. As the volunteer was leaving he also recommended that [redacted] be transferred from the security department to the Tree Planting

Department (TPP) because he was very good in mobilising communities. The two recommendations made it possible for [redacted] to be transferred to the TPP and in 2011, he was made an Assistant Programme Officer in the Mbale Tree Planting Programme (MTPP). [redacted] has worked so hard to sensitise people on the importance of tree planting that whenever he is walking in the communities, children run after him shouting "Byala Bisaala" meaning "Plant Trees".


Part of [redacted]s homestead.

While the trees that [redacted] first planted have grown and one would expect him to be earning a lot of money from sale of timber, this is not his main objective. [redacted]'s trees are majorly for public good and home use. In 2014, about one hundred and fifty (150) housing structures in [redacted]'s village had their roofs blown off by a strong stormy wind. [redacted]'s house was almost the only one that survived because it was a house in a forest. This was a clear demonstration that homes and other housing structures are protected from destruction by strong winds if they have trees planted in the compounds or close to the homes. This concept has been widely adapted by the community members in [redacted]'s village and not a single home can be found without trees in the compound.

With the advent of the destruction of housing structures in 2014, [redacted]'s trees became very useful. He gave five (5) big Musizi trees from which over three hundred 300 pieces of timber were obtained to re-roof a Mosque of Namabasa. [redacted] gave five hundred (500) 6' 2" pieces of timber for the Takuwa Mosque. He went further and offered two full-lorries of big logs to Nakaloke Centre Mosque, where the congregants had tried to raise the money for timber but had failed.

[redacted] does not only support Mosques but also helps churches with timber. He has also harvested timber which he intends to use for roofing his house of six rooms and three bathrooms. The house is planned to be self-contained with water borne toilets. The construction of this house has been made possible with the monthly salary that [redacted] gets as a tree nursery bed operator. [redacted] started preparation for construction in 2017 but the construction is taking a bit of time because he only uses the salary savings from MTPP. Notwithstanding, [redacted] is grateful for the bonus he got in March 2020 as the 13th month. This was equivalent to 120 Pound Sterling and it has boosted the house construction.

"I do not cut trees to get timber for sale. My plan is to maintain the trees and become a source of seeds as a sustainability measure for our community". As a matter of fact, [redacted] has already collected about seven (7) kilograms of *Bathedavia* (False Muvule) which he is keeping at his home. In addition, [redacted] has given the community members liberty to pick fruits from his trees for eight (8) years). However, there are some conditions to the free access of fruits such as: harvesting only the ripe fruits and not harvesting using big containers. The reason he restricts people from harvesting a lot is to ensure that the ripe fruits are equitably accessed by many community members. [redacted] has encouraged all

community members who eat his fruits free of charge to plant their own and this has been done to a great extent.

In respect of food security, [redacted] is currently multiplying a type of yam which gives high yields when planted amongst trees because it is a climbing plant. With good management, the plant is able to produce 40 kilograms (kgs) of tubers compared to 10 kgs when left to grow as a creeping plant. This means that one plant of climbing yam is able to feed a family of five (5) people for two weeks (*see photograph at the end*). [redacted] is very happy because the Mbale Tree Planting Programme had opened doors for him and enabled him expand his network of environmental conservationists.

In 2013, [redacted] was selected to attend a two-week training in Permaculture in Kenya. There was a follow-up of this training in 2017 and 2018. In 2019, [redacted] attended a training in Kyotera, Uganda. These trainings were facilitated by highly knowledgeable consultants from all over the world. This has increased [redacted]'s knowledge not only in tree planting but in caring for Mother Earth holistically. [redacted] has grounded his children in tree planting. His eleven year of son has one thousand personal trees in his parents' land. He has also facilitated planting of 500 trees in Namatala Primary School where he studies from. He gets the seedlings from the community nursery, takes them to school, mobilises his fellow pupils to plant and care for the trees.

END

ANNEX II: Table: 1 Major Actors in Climate Action in Mount Elgon Region for the period 2010 to-date

Programme / Project	Organization	Activities	Duration	Estimated Contribution
Mbale Tree Planting Programme	Size of Wales / METGE	Support to tree nurseries Construction of fuel saving stoves Supports Village Savings and Loaning Associations	2010-2020 Project was implemented for over ten years	10,000,000 trees to 18,000 beneficiaries.
Resilience Framework to Support Climate Change (RFCC) Adaptation in the Mt. Elgon Region of the Lake Victoria Basin Project.	IUCN	Production of various Communication materials used to provide outreach and sharing of information by key stakeholders and the local community in Bukwo, Bududa, and Manafwa on the Ugandan side. National: IUCN in collaboration with ACCESS produced more scientific information and knowledge products on the Mt. Elgon Ecosystem topography, watersheds, geology and soils, land-use/land cover changes, and climate change to support the implementation of climate adaptation actions.	2013-2015 Project implemented for about 3 years.	Unable to establish the number of beneficiaries reached with the message.
Mountain Elgon EBA Project	IUCN	Restoring, maintaining and enhancing the capacity of the ecosystem to continue to produce natural services for local communities, and withstand climate change impacts and other stressors. Measures taken included the use of roadside drainage bunds and run-off retention drains to improve water retention, and tree planting using an agroforestry approach to stabilize soil to reduce landslides.	2014-2015 Project implemented for about 2 years.	Unable to establish the number of beneficiaries reached with the message.
Ecosystem Based Adaptation (EBA) in Mountain Elgon Ecosystem.	IUCN, UNEP, UNDP, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	I) Support development of methodologies and tools for EBA – ecosystem based adoption decision making, ii) Application of developed tools and methodologies at national level iii) Implementation of EBA pilots at the ecosystem level and iv) Formulation of national policies and building an economic case for EBA at the national level. (Bulambuli and Sironko).	2012 -2014 3 years period.	Unable to establish the number of beneficiaries reached with the message.

Overall contribution of IUCN		IUCN has made contributions largely in the form of technical support towards the development of FLR related policies such as REDD+ strategy and ROAM process; training local communities in tree growing and sustainable land management practices; IUCN has visibly and consistently advocated for some key FLR related issues particularly on gender mainstreaming and pro-poor human rights considerations within the national REDD+ process such as equitable participation and consultation. Other contributions by IUCN included convening at national, district and community levels (for example, IUCN has facilitated multi-stakeholder convening around key International moments such as UNFCCC Conference of Parties (COP) processes; convening to share information and expertise through multi-stakeholder platforms such as the Mt. Elgon Stakeholders Platform).	2010-2017 About 8 years. This encompasses all the projects of IUCN listed above.	This has been mainly on policy processes.
The Trees for Food Security (T4FS) project	ICRAF / NaFORRI	Operates a Rural Resource Centre (RRC) is Mbale that acts as a training hub and convening place for local communities, district technical staff and local administration. It has training rooms, tree nurseries, propagators, seed stands, technician's offices and a store for seeds and equipment. Over 2,000 farmers have benefitted, largely from training and demonstration sessions with hands-on experience on tree nursery management, planting and management. The RRC also supports five satellite nurseries run by farmer groups for income generation. T4FS works in Mbale, Manafwa and Sironko.	2012-2016 Implementation so far has been for 5 years	Over 500,000 assorted seedlings for timber and improved fruit trees were raised and distributed to 3500 beneficiaries. 2000 beneficiaries were trained in nursery management and tree planting. Hence a total of 5,500 beneficiaries.
Trees for Global Benefits	ECOTRUST	Supports Village Savings and Loaning Associations and commercial nurseries Links small scale landholding farmers to the voluntary carbon market based on the Plan Vivo standard. Supports sale of PVC through PES Agreements.	2017 – 2052 (Less than four years of implementation)	For the year 2018 was 24,470[3] trees
Territorial Approach to Climate Change (TACC) Project for the Mbale Region of Uganda" UNDP/GEF / DANIDA/ DFID/ Walsh Assembly Government / MWE/ Mbale/ Manafwa/ Bududa District Local Governments	ECOTRUST	The Project effort was focused on building local capacity for making agro-forestry, livestock rearing and tree management, improved livelihood and environment for the benefit of the local communities. Target districts were: Mbale, Manafwa and Bududa.	2010-2012 (extended to 2013). A total of 25,441 beneficiaries were reached.	Planted over 3,800 fruit trees, 22,902 coffee seedlings and 338,578 different varieties of trees totaling to 365,280.

[3] ECO-Trust (2018) Trees for Global Benefits: Plan Vivo Annual Report

ANNEX III: TREE SPECIES PROMOTED UNDER THE PROGRAMME

Tree Specie	Relative importance
Measopsis Eminii	Timber, shade tree for coffee and tea, medicinal (bark)
Funtumia	Medicinal (leaves and roots), pollinator, improves soil fertility and protects soil from erosion
Croton macrostachyus	Medicinal, shade tree, firewood
Persea americana	Fruits, wood and shade
Cedrella ordorata	Timber, building poles, firewood, ornamental
Markhamia lutea	Shade, firewood, soft wood for timber, building poles, cultural importance, used for art and crafts (furniture)
Prunus africana	Medicinal, hardwood for timber, furniture and art and craft pieces
Cordia millenii	Shade, medicine, timber, edible berries and building materials
Albisia Coriaria	Legume, medicinal and firewood
Acrocarpus flaxifolius	Legume for nitrogen fixing, Wind breaks, slop stabilization, wood
African mahogany	Timber, furniture, making boats, offcuts used for firewood
Grevillea robusta	Legume, timber, firewood, wind breaks
Melia volkensii	Firewood, building poles, wind break
Azadiractha indica (Neem)	Largely medicinal: for fever, stomach disorder, antibacterial, treats burns and skin problems. It also ornamental.
Cordia africana	Timber, provides shade for crops, medicinal values, pollinator for bee forage and firewood
Ficus ssp (elastica)	Used for boundary marking, medicinal values, the fruit contains sugar and vitamins
Gmelina arborea	Leaves used for Fodder, tree can be used for rearing silkworms, can be used for carvings and art pieces.
Indian mahogany	Furniture, timber, drum making and firewood
Jacaranda mimosifolia	Medicinal, wind break, wood
Aleurites moluccana (Kabak'anjagala)	Ornamental
Milicia excelsa (Local Muvule)	Agroforestry, wind break, medicinal for fever, ornamental
Neolamarckia cadamba (Bathdavia)	Wood, medicinal, fuel wood and boundary marking
Terminalia catappa (Badam Tree)	Ornamental, medicinal and provides wood
Terminalia superba	Medicinal, timber, used in traditional medicine
Tremar orientalis	Charcoal, firewood, foliage, medicinal values.
Calliandra calothyrsus	Fodder, nitrogen fixing, firewood, bee forage, boundary making
Gliricidia sepium	Fodder, fencing, firewood, green manure, nitrogen fixing (intercropping), shade for coffee.
Leucaena leucocephala	Fodder, hedge planting, green manure, timber and bio fuel.
Tephorosia vogelli	Fodder, organic tick control in livestock
Annona muricata (Soursop)	Medicinal, intercropping and wood
Avocado	Fruits eaten, income generating for households, wind break, medicinal
Cashewnut	Medicinal,
Guava	Medicinal, fruits are rich in vitamins and eaten by all categories of people; children and adults, can be used for firewood
Jackfruit	Food, medicine, furniture and art carvings
Jambula (Java Plum)	Fruits, medicinal for STDS
Citrus sinensis (Lemon)	Makes fruit juice, rich in vitamin C.
Mangifera indica	Fruits, medicinal, firewood
Passiflora indica (Passion fruit)	Medicinal, Ornamental and fruits are rich in vitamins.
Papaya carica (Paw-paw)	Fruits are food rich in vitamins C and E. Leaves are medicinal.
Tarmarindus indica	Medicinal, fruits for food with high nutritional values.

ANNEX IV: INTERVIEW GUIDE FOR THE PROJECT STAFF

Preamble: This impact study has been commissioned by Size of Wales that is supporting a programme of tree planting in the Mount Elgon Region. The Programme is funded by the Welsh Government and managed by Mount Elgon Tree Growing Enterprise (METGE). This study is intended to facilitate better understanding of the outcomes and impact of the tree planting programme and lessons learnt to date.

We would like to assure you that the information given will be treated with the highest level of confidentiality and will not in any way be used for any other purpose that is not related to the Mbale Tree Planting Programme, Size of Wales and Welsh Government.

Improved forest environment

1. Give an overview of the programme.
2. The total acreage of tree cover in Mbale currently and what it was before the programme?
3. The average number of trees per acre planted under the programme. (Conduct site visits to plantations)
4. The types of trees, the level of species diversity and their relative importance to coffee.
5. The proportion of indigenous (native) and non-indigenous tree species

Improved agroforestry/ tree planting knowledge, understanding and practice of programme participants

6. What kind of training do you conduct under the programme?
7. What has been the level of learning and practice of the trained beneficiaries under the programme?
8. Have you been able to practice what you are teaching community members? If not give reasons.

Improved livelihoods for METGE staff

9. What was your source of income prior to the programme?
10. How has your annual income changed over the years?
11. What differences have occurred over the years as a result of being employed by METGE?
12. Establish the number of men, women, boys and girls employed by METGE and their levels on the organization structures.
13. Establish the level of equality and equity among the employees in terms of equal pay for equal worker.

Improved programme participants' livelihoods impacted by forest related activities

14. How has the intervention contributed to improving and protecting crop yields and improving food security? Substantiate
15. What social changes can you attribute to the programme?
16. What are some of the cultural benefits that have accrued as a result of the programme?
17. Are the benefits above the same for men & women; girls & boys; persons with disabilities and migrants or ethnic minorities? If different give reasons for this.
18. From your interaction with beneficiates, rank the below forest related benefits in order of practical usefulness to the beneficiaries? i) Food ii) Medicine from the roots, bark, leaves and fruit iii) Livestock fodder IV) Firewood v) Timber VI) Beekeeping vii) Shade from damaging sunlight and heavy rainfall in agroforestry systems viii) intercropping with coffee, bananas, beans, and many other food crops ix Shade for playgrounds and community groups
x) Climate concerns

Impact

19. What is the status of carbon sequestering and how many beneficiaries are involved in Voluntary Carbon Market?
20. How much income have they got from this initiative? If no why not?
21a. what significant social, environmental and economic effects; positive or negative, intended or unintended, has the programme generated?
21b. Please summarize the above in a diagram.

Sustainability

22. What linkages have you fostered with other projects with similar objectives in your district and beyond?
23. Describe the extent to which the net benefits of the intervention noted above are likely to continue.

Recommendations

24. What key challenges have been faced during implementation?
25. How best could the challenges have been overcome?
26. What strategies have yielded superior results for scaling up and replication?
27. How can such a programme be made more suitable?

ANNEX V: INTERVIEW GUIDE FOR TECHNICAL-POLITICAL LEADERSHIP

Preamble: This impact study has been commissioned by Size of Wales that is supporting a programme of tree planting in the Mount Elgon Region. The Programme is funded by the Welsh Government and managed by Mount Elgon Tree Growing Enterprise (METGE). This study is intended to facilitate better understanding of the outcomes and impact of the tree planting programme and lessons learnt to date.

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Improved forest environment

1. How has the total acreage of tree cover in Mbale changed since 2010?
2. Who have been the key stakeholders in contributing to increased tree cover?
3. Of these, what is the estimated percentage that has been contributed by programme of Wales?

Improved agroforestry/ tree planting knowledge, understanding and practice

4. What changes do you observe in respect of tree planting in your district?
5. What things are community members are doing which they were not doing before the programme?

Improved programme participants' livelihoods impacted by forest related activities

6. Has the programme contributed to improving and protecting crop yields and improving food security? Examples.
7. How has your annual income changed over the years?
8. Are there some social and cultural benefits that have accrued as a result of the programme?
9. Rank the below forest related benefits in order of practical usefulness to the community.
   i) Food ii) Medicine from the roots, bark, leaves and fruit iii) Livestock fodder iv) Firewood v) Timber VI) Beekeeping vii) Shade from damaging sunlight and heavy rainfall in agroforestry systems viii) intercropping with coffee, bananas, beans, and many other food crops Ix Shade for playgrounds and community groups x) Climate concerns

Impact

10. How have the people adapted to climate change in agriculture?
11. To what extent is soil erosion currently managed? What about landslides?
12. What measures have you put in place to reduce the amount of rainwater draining from farmland
13. Have you heard about sequestering of carbon and the use of Voluntary Carbon Market? If yes how much income has come to the district? If no why not?
14. What significant social, environmental and economic effects; positive or negative, intended or unintended, has the programme generated?

Sustainability

15. Describe the extent to which the net benefits of the intervention noted above are likely to continue.

Recommendations

16. What key challenges have been faced during implementation?
17. How best could the challenges have been overcome?
18. What strategies have yielded superior results for scaling up and replication?
19. How can such a programme be made more suitable?

ANNEX VI: INTERVIEW GUIDE FOR NURSERY OPERATORS

Preamble: This impact study has been commissioned by Size of Wales that is supporting a programme of tree planting in the Mount Elgon Region. The Programme is funded by the Welsh Government and managed by Mount Elgon Tree Growing Enterprise (METGE). This study is intended to facilitate better understanding of the outcomes and impact of the tree planting programme and lessons learnt to date.

We would like to assure you that the information given will be treated with the highest level of confidentiality and will not in any way be used for any other purpose that is not related to the Mbale Tree Planting Programme, Size of Wales and Welsh Government.

Questions

1. Name of the nursery and when it started? (Can be got from literature review)
2. How many men, women, female youth, male youth are employed in managing your nursery or are members?
3. Leadership composition. Disaggregate by sex and age.
4. What process did you go through before you became a nursery operator?
5. What motivated you to become a nursery operator?
6. Describe the different tasks done in nursery management and who does what?
7. Where do you get the seeds for your nursery?
8. How many saplings/ seedlings are you able to raise in one season? (Compute for a year).
9. What types of seedlings are raised in your nursery and the proportion of indigenous tree species?
10. How many seedlings/ saplings has your nursery produced since it started?
11. Describe the level of demand for saplings in your area.
12. How many seedlings have you sold over the years?
13. How many did you sell in the last March- May season?
14. What has been the annual income from the nursery since you started?
15. How do you divide the income from the seedlings between the different categories of members? (Ask for evidence, check for differences and establish the reasons for this).
16. Do you save some of the money from the nursery? (state amount for different years)
17. What challenges have you encountered in managing the nursery? How have you overcome them?
18. How do you think some other pending challenges should be addressed?

Improved agroforestry/ tree planting knowledge, understanding and practice

19. What are some of the things you have learnt as a result of being part of this programme?
20. What do you think is the importance of agroforestry / tree planting?
21. What are some of the things you are doing currently that you never used to do before the programme?
22. Are there things you would like to do as a result of the training but you are unable to do? Reasons.

Improved programme participants' livelihoods impacted by forest related activities

23. What was your source of livelihood prior to becoming a nursery operator?
24. Did this change when you became a nursery operator? How has this affected your annual income?
25. How many trees have you planted in your land since 2010? (Give figures for each year).
26. On average, what has been the survival rate in the 1st, 3rd and 5th year? If low survival probe for the reasons.

27. How many trees do you currently have?
28. How many did you cut down for home fuel, home construction and how many for sale?
29. How much money have you got from the sale of trees?
30. How has tree planting contributed to improving and protecting crop yields and improving food security?
31. What are some of the social and cultural benefits that have accrued as a result of the programme?
32. Are the mentioned benefits the same for men & women; girls & boys; persons with disabilities and migrants or ethnic minorities? If different give reasons for this.
33. For your nursery group, rank the below forest related benefits in order of practical usefulness to your family. i) Food ii) Medicine from the roots, bark, leaves and fruit iii) Livestock fodder iv) Firewood v) Timber vi) Beekeeping vii) Shade from damaging sunlight and heavy rainfall in agroforestry systems viii) intercropping with coffee, bananas, beans, and many other food crops ix Shade for playgrounds and community groups x) Climate concerns.

Impact

34. How has the knowledge helped you to adapt to climate change in agriculture?
35. How has the knowledge helped you to manage soil erosion?
36. How has the knowledge helped you to manage landslides? To what extent do you practice Slope stabilization to reduce the risk of landslides?
37. What measures have you put in place to reduce the amount of rainwater draining from farmland
38. How has the knowledge helped you to reduce deforestation and over-cultivation?
39. To what extent do you rely on wood and charcoal for cooking?
40. What kind of cooking stoves do you use? Are you involved in any sequestering of carbon and the use of Voluntary Carbon Market? If yes how much income have you got from this initiative? If no why not?
41. What significant social, environmental and economic effects; positive or negative, intended or unintended, has the programme generated?

Sustainability

42. Are you in position to procure seed on your own with the support of MTGE?
43. What linkages have you fostered with other projects with similar objectives in your district and beyond?
44. Describe the extent to which the net benefits of the intervention noted above are likely to continue.

Recommendations

45. What key challenges have been faced during implementation of the entire programme?
46. How best could the challenges have been overcome?
47. What strategies have yielded superior results for scaling up and replication?
48. How can such a programme be made more suitable?

ANNEX VII: HOUSEHOLD QUESTIONNAIRE FOR RETROSPECTIVE IMPACT STUDY OF MBALE TREE PLANTING

CODE ☐

Preamble: This impact study has been commissioned by Size of Wales that is supporting a programme of tree planting in the Mount Elgon Region. The programme is funded by the Welsh Government and managed by Mount Elgon Tree Growing Enterprise (METGE). This study is intended to facilitate better understanding of the outcomes and impact of the tree planting programme and lessons learnt to date.

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Name of the Interviewer (mandatory) _____

Start Time _____ End Time _____

BRIEF BIO-DATA

Name of Interviewee (Optional) _____ Contact _____

1. Sex _____ **2.** Age _____ (16- 24; 25-35; 36-45; 46-54; 54-65; 65<)

3. Highest completed level of education ☐ None ☐ Primary ☐ Secondary ☐ Diploma ☐ Degree

4. Marital status: ☐ Single ☐ Not married ☐ Married ☐ Separated ☐ Divorced ☐ Widowed

5. Occupation _____ 6. Sub-county _____ 7. Group _____

8. Implementing Partner _____

Theme: Improved agroforestry/ tree planting knowledge, understanding and practice

9. What is the importance of agroforestry / tree planting?

_____

_____

10a. Did you undergo training under Size of Wales or the above Implementing Partner programme? Yes ☐ No ☐

10b. If yes, what are some of the things you have learnt as a result of the training under the programme?

_____

11. What are some of the things you are doing currently that you never used to do before the programme?

_____

12. Are there things you would like to do as a result of the training but you are unable to do? ☐ Ye ☐ No

12b. Give reasons for your answer.

Improved livelihoods impacted by METGE staff and partners' direct employment in delivery of the programme

13. In order of priority list your sources of income prior to the programme?

14. What differences have occurred over the years for each of the sources of income as a result of the programme?

Improved programme participants' livelihoods impacted by forest related activities

15. In your household how has the intervention contributed to improving and protecting crop yields?

16. In what ways has the programme improved food security in your household?

17a. Does your household have access to food all the year around? ☐ Yes ☐ No

17b. If NO, how many months do you experience food scarcity in your household?

☐ One ☐ Two ☐ Three ☐ Four ☐ Six ☐ Eight ☐ Twelve

18. How many months were you experiencing food scarcity in your household before the programme started?

☐ One ☐ Two ☐ Three ☐ Four ☐ Six ☐ Eight ☐ Twelve

19a. How many trees have you planted since 2010? (Give figures for each year).

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020

19b. If you have not planted any trees or have planted very few, why has this been the case?

20a. On average, what has been the survival rate of the planted trees: ☐ 1st year ☐ 3rd year ☐ 5th year

20b. If low survival rate probe for the reasons.

21. How many trees do you currently have?

22. How many did you cut down for: ☐ home fuel ☐ construction ☐ for sale?

23. How much money have you got from the sale of trees?

24. How has your annual income from forest related activities changed over the years compared to the overall income of the household?

25. What social changes can you attribute to the programme?

26. What are some of the cultural benefits that have accrued as a result of the programme?

27a. Are the benefits above the same for men & women; girls & boys; persons with disabilities and migrants or ethnic minorities ☐ Yes ☐ No

27b. If different give reasons for this.

Improved programme participants' livelihoods impacted by forest related activities

28. Rank the below forest related benefits in order of practical usefulness to your family.
i) Food ii) Medicine from the roots, bark, leaves and fruit iii) Livestock fodder
iv) Firewood v) Timber vi) Beekeeping
vii) Shade from damaging sunlight and heavy rainfall in agroforestry systems
viii) intercropping with coffee, bananas, beans, and many other food crops
ix Shade for playgrounds and community groups
x) Climate concerns

The impacts that the tree planting programme has had on the farmers and communities in Mbale Region

29. How has the knowledge acquired under the programme helped you to adapt to climate change in agriculture?

30. How has the knowledge helped you to manage soil erosion?

31. How has the knowledge helped you to manage landslides?

32. To what extent do you practice Slope stabilization to reduce the risk of landslides?
☐ Not all ☐ Less extent ☐ some extent ☐ Good extent ☐ Very good extent

33. What measures have you put in place to reduce the amount of rainwater draining from farmland?

34. How has the knowledge helped you to reduce deforestation and over-cultivation?

35. Rank what you use for cooking in order of most used?

☐ Wood ☐ Charcoal ☐ Gas ☐ Electricity ☐ Other (specify

36. What kind of cooking stoves/ place do you use? ☐ Ordinary 3 Stones ☐ Lorena stove ☐ Other type

37. What significant social, environmental and economic effects; positive or negative, intended or unintended, has the programme generated?

38. How has the programme promoted gender transformation?

Sustainability of the project

39. What linkages have you fostered with other projects with similar objectives in your district and beyond?

40. Describe the extent to which the net benefits of the intervention noted above are likely to continue.

Lessons learnt and Recommendations to support the new phase of the programme

41. What key challenges have been faced during implementation?

42. How best could the challenges have been overcome?

43. What strategies have yielded superior results for scaling up and replication?

44. What are the lessons learnt

45. How can such a programme be made more suitable?

THANK YOU FOR THE TIME AND VALUABLE DISCUSSION.

ANNEX VIII: REFERENCES

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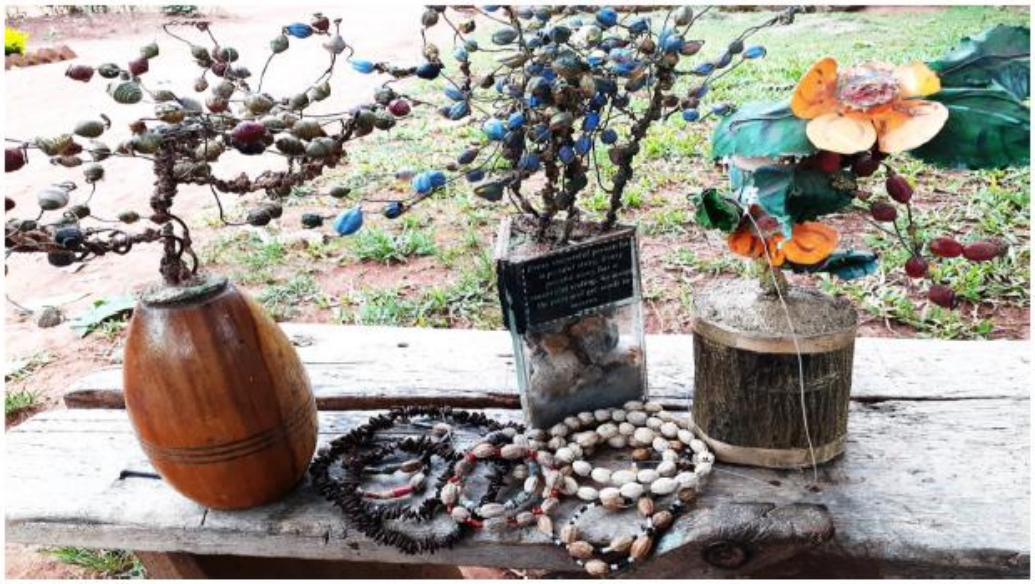

Ornaments and necklaces made from forest products made by one of the groups under Salem Brotherhood.

Climbing yams intercropped in a woodlot in Namabasa.