UP-SCALING CLIMATE SMART AGRICULTURE AT MPATHENI AND NKHUNGWINI IN SWAZILAND

Terminal Evaluation Report

August 2016

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LIST OF ABBREVIATIONS

AEO	Agricultural Extension Officer
CA	Conservation agriculture
CAADP	Comprehensive Africa Agricultural Development Programme
CBO	Community based organizations
CC-A and CC-M	Climate Change Adaptation and climate change Mitigation Framework
COMESA	Common Market for Eastern and Southern Africa
CSA	Climate smart agriculture
DFID	Department for International Development
FAO	Food and Agricultural Organisation
FGD	Focus group discussion
GHG	Greenhouse gas
HIV/AIDS	Human *Immuno deficiency* Virus/Acquired Immune Deficiency Syndrome
HH	Household
IFAD	International Fund for Agricultural Development
IPCC	Inter-ministerial Panel in Climate Change
KII	Key informant Interviews
M&E	Monitoring and Evaluation
MoA	Ministry of Agriculture
NAMBoard	National Agriculture Marketing Board
NCCSAP	National Climate Change Strategy and Action Plan
NGO	Non-Governmental Organization
PS	Principal Secretary
SADC	Southern African Development Community
SMART	Specific, Measurable, Attainable, Relevant and Time Bound
SNL	Swazi Nation Land
SPSS	Statistical Packages for Social Science
SRDA	Southern Rural Development Areas
TV	Television
ToR	Terms of Reference
TOTs	Training of Trainers
UNDP	United Nations Development Programme
WVS	World Vision Swaziland

GLOSSARY

"*Kukhonta"* - *Land* allocation system used by the chief under Swazi Nation Land. The subject has to pay a cow or an equivalent in cash for land allocated.

"*Dadanana"* - Local Name is for a Rotavator

"Encabeni" - Fresh Produce Market - An outlet, at NAMBoard, for produce by Swazi farmers

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AFFIRMATION

The affirmation states the motive and objectives of the evaluation report being presented and also that the material is original work. It would also be appropriate to acknowledge that the intellectual properties of the evaluation report rest with the communities about which the report is written.

“Except as acknowledged by the references in this paper to other authors and publications, the evaluation described herein consists of our own work, undertaken to implement the activities of the project”

Primary quantitative and qualitative data collected throughout the evaluation process remain the property of the communities and families described in this document. Information and data must be used only with their consent.

Principal Investigator – Mr Emmanuel S. Nkambule

EXECUTIVE SUMMARY

To counter the effects of climate change and variability, Swaziland received support from the Community of Eastern and Southern Africa- East Africa Commission-Southern Africa Development Community (COMESA-EAC-SADC) Climate Change Programme, intended to enable smallholder farmers to use improved techniques to increase their yields and incomes, while reducing the impact of future Climate Change on agriculture. The programme was implemented by the Ministry of Agriculture through one of its parastatals, the National Agricultural Marketing Board (NAMBoard) which has capacity in the field of irrigation as well as vegetable growing and marketing. The programme was implemented in the irrigation schemes at Mpatheni, Nhletjeni and Nkhungwini in the Shiselweni Region of Swaziland. The key and specific actions undertaken by NAMBoard while implementing the COMESA-EAC-SADC Climate Change Programme included the following:

- Transformation of irrigation systems in the schemes to use efficient technologies (particularly drip irrigation).
- Provision of robust extension service in the project areas.
- Development of a mini-market (holding facility) to ensure freshness of vegetables before they are transported to *Encabeni* and other markets.
- Ensuring all year round production of vegetables since the farmers would be able to harvest all their produce at once to be stored in the holding facility.

Consistent with the principles of the evaluation, the approach used for data collection was mainly participatory both qualitative and quantitative. The evaluation team conducted a total of nine (9) Focus Group Discussions (FDGs) in the study areas. These FDGs covered a wide spectrum with the beneficiaries on conservation around climate change, CSA technologies, project relevance, sustainability and challenges experience in the project. Furthermore, interviews were conducted with key stakeholders in the program that included, Chairpersons of Farmer Groups, Chief Extension Officer and the Project Manager. Quantitative data was collected using structured interviews to randomly select project beneficiaries representing both genders with a sample size of 109 beneficiaries for administration of the survey questionnaire.

To get a better insight of the programme, the evaluation team conducted a desk review that focused on documentation produced by NAMBoard such as project progress reports, CSA baseline studies, project reports, summary of financial reports, quarterly reports as well as national documents relevant to the project to provide answers to the evaluation and the research questions. The qualitative data was collected through key informant interviews and FDGs, and was transcribed and analyzed using Nvivo 9 software. The quantitative data collected was coded and analyzed using SPSS Version 20. The specific data analysis applied to the data included descriptions such as frequencies, means, median, as well as comparative cross tabulation.

Key Evaluation Findings

The following findings have been discussed based on the terminal evaluation criteria, relevance, effectiveness, impact, sustainability and efficiency.

Relevance

The project was found to be relevant across a wide spectrum of development in the country. The objective of the project was aligned to the Draft Climate Change Policy 2015 and National Climate Change Strategy and Action Plan (NCCSAP) 2014-2019, the National Food Security Policy of 2005, National Capacity Self-Assessment Report on National Capacity Needs, Constraints and Priorities for the Implementation of the Climate Change Report, Desertification and Biodiversity Conventions 2005. Furthermore, the project remained in line with other sustainable development initiatives of the Government of Swaziland as indicated in the revised national, Vision 2022.

The CSA project had various objectives that included: improving knowledge on CSA, adoption of CSA technologies, increase in crop and vegetable production, access to credit in the form of farming inputs and improved food security at household (HH) level. Farmers reported adoption of at least one Climate Smart Agriculture technique such as; use of manure, contour terracing, tree planting and crop rotation as well as intercropping. Another contribution of the CSA project noted was improvement in the dietary diversification as farmers were assisted with producing vegetables that were consumed at HH level. Project outcomes can stimulate other business opportunities in the vegetables production value chain.

The evaluation team concluded that the CSA project was relevant to the needs of the community and aligned to the national strategies, as most of the activities implemented by NAMBoard are highlighted in the revised National Development Strategy (NDS) in the mitigation of climate change effects as well as increasing HH incomes through increased agricultural production.

Efficiency

It should be mentioned that efficiency as discussed in this section focuses on the project facilitation and the ability to ensure efficiency in the activities' implementation. The project output was commensurate to the inputs as most of the findings indicated positive outputs. The project adopted the most efficient approach in project implementation as NAMBoard involved the project beneficiaries in most stages of the planning process and activity implementation. In addition, conducting the baseline study assisted the CSA project team employ an informed benchmark for activity implementation.

The organizational structure of the project included the partnership between COMESA and the Government/MOA, that worked through the Project Steering Committee (PSC) under the leadership of the MOA Principal Secretary (PS) and constituted key staff from UNDP, MOA/NAMBoard (CEO, Agri-Business Manager, Project Manager, Project Accountant) and Farmers Association representatives. Each party also undertook a role in the management of the project which included; COMESA the funder, Government/MOA recipient of loan and provision of administrative support, UNDP responsible party for quality assurance and NAMboard the Implementing Partner (IP).

The organizational structure allowed the project team to implement the activities and readjust where required through guidance from the Project Steering Committee (PSC) chaired by the Principal Secretary (PS) at the Ministry of Agriculture (MOA), see Annex 4 for the organogram. The continuous interaction of the project team and the relevant structures in the communities, necessitated management responsiveness to changing circumstances on the ground and working towards achievement of the program results.

The evaluation observed that there were strong project financial controls maintained including co-financing arrangements with the Ministry of Agriculture. The project engaged the services of a Project Accountant specifically for stringent financial controls. There were also independent financial audits for the project undertaken through the UNDP National Implementation Modality (NIM) by the Auditor General of Swaziland in 2015. Another audit was instituted in March 2016 by an independent auditor KPMG commissioned by COMESA.

COMESA provided most of the funding for utilisation in the implementation of the project activities. Cost-sharing facilitated a larger proportion of the budget. The project was managed under the UNDP and the NAMBoard Agri-Business Office. The Agri-Business Office also provided support technical knowledge, budgeting and marketing of produce.

Effectiveness

The effectiveness was measured on basis of progress made towards achieving the project outcomes. The CSA project was holistic to bear results to the project beneficiaries within the two year span of the project implementation. An improved drip-irrigation and efficient infrastructure was put in place for 32ha for vegetables and other high value crops production at Mpatheni. The procured implements for conservation agriculture (CA) such as the two (2) rippers, two (2) boom sprayers, no-till Planter and fencing for (CA) demonstration plot at Nkhungwini. There was also establishment of a revolving fund which saw a total of 24 farmers from Nkhungwini accessing resources amounting to E68, 359.00. It should however be noted that not all farmers have been able to access the funds.

Knowledge has also been imparted or shared to farmers either through trainings or through 'farmer to farmer' support on adoption of CSA technology. Through the CSA project, Farmers, "***Champion Farmers"*** and Extension Officers from MOA have been capacitated and trained on various components of the project including: drip irrigation installation, CSA technologies, climate change adaptation (CC-A) and mitigation (CC-M). In total, 406 farmers were trained on CSA practices while 50 Extension Officers were trained on conservation agriculture. As part of strategy for adoption of CSA technology, 93 "**Champion farmers"** were trained on CA and vegetable production principles. These cohorts of farmers have been trained as lead farmers to train others in the community beyond the project life. As a result of the training received from the project, it was revealed that CSA and CA capacities have increased.

The evaluation noted gaps with the NAMBoard's transparency in the implementation of the project as the communities reported inadequate update and engagement on the progress and the changes in the plan. This resulted in disengagement of the community members.

Impacts

Farmers were found to have changed farming technology from traditional methods to adoption of CSA technologies: 81% of the farmers at Mpatheni changed farming technology used in farming of crops, whilst 87% of farmers at Nkhungwini changed technology used in farming crops under CSA. The change from traditional methods to CSA farming technology by the farmers is an indication of acceptance and realization of the advantages of using the technology. Other CSA technologies adopted by farmers included; crop rotation, inter-cropping, use of hybrid seeds, application of pesticides/herbicides, use of improved infrastructure such as No-till planter, Ripper, Jab planter of cultivation, direct seeder, which were implements provided under the CSA project at the Southern

Rural Development Area (SRDA). The increase in proportion of farmers using the CSA technology could assure knowledge translation to other farmers who have not yet adopted the various technologies.

Key findings reveal acquisition of income by the farmers and their HHs through the vegetable production and selling, bringing profit which was reportedly used to purchase assets. The evaluation noted that the most common asset bought by beneficiaries was the cell phones in all study areas. Other assets that have been acquired as a result of benefits from the project, include; television (TV), radios, stoves, clothing, refrigerator, new houses or corrugated sheets, cars and bicycle. The CSA project also contributed to increased access to credit facilities in the form of revolving fund established to assist farmers to access loans. There was also assistance through creation of national markets (beyond the community) which farmers previously had little or no access to indicating impact of the project on beneficiaries' livelihoods.

Sustainability

The 'visionary' project was intended to address the community involvement and project ownership. The farmers showed mixed feelings on the sustainability of the project beyond the NAMBoard/ COMESA/UNDP support. The community members have acquired the skills needed to sustain the project as farmers were found hard at work in both project areas showing commitment or ownership to project outcomes. In addition, ground was covered with regards to capacity building both at community level and with institutions involved in the CSA project. Farmers have been capacitated in many aspects of the project such as installation of the drip irrigation system and its components. At the institutional level, NAMboard has also capacitated project staff members on the various components of the CSA project and technologies. Likewise, MOA trained 50 Extension staff in CSA technologies. Agriculture extension officers were also capacitated to serve as Trainer of Trainers (ToT's), who in turn will train other farmers on CSA technologies beyond the project life.

The evaluation however noted that there are no revenue streams that have been defined in the project to make it self-sustaining in future. The project beneficiaries have not established their own fund to cater for any eventualities once the project funding has ended.

Sustainability could still be achieved, but certainly not within the lifespan of the project. It will require an extension of project and NAMBoard's follow-through efforts in enabling community-led management structures leading to project outcomes sustainability.

Lessons Learnt

Several lessons were learnt with respect to the implementation of CSA project. These include:

- Awareness and training among farmers increases success of CSA. Dissemination of information and skills through 'famer to farmer' pathways are effective in delivering desired results and enhancing CSA technology adoption. Exposure visit is essential in accelerating adoption and sustaining of newer innovations for both agricultural extension officers and farmers
- Availability of Extension Services and support is essential in scaling up CSA.
- Community participation in implementation and planning of CSA through demonstration plots aids in adoption of CSA technologies.
- Land tenure system plays a major role in adoption of various CSA practices.

- Labour is an important variable for affecting scaling up of CSA as less labour intensiveness technologies are favoured by some farmers.
- Government procurement procedures can delay the process of implementing community interventions.
- Private sector and Government can effectively work together to realize the goals of implementation/ design and CSA adoption by farmers. In turn, the partnership promotes accessibility to markets by the farmers under the CSA project.
- Revolving fund loan deductions made at the point of sale yield a high recovery rate.

Recommendations

Based on the conclusions, it was recommended that:

- In enabling quicker allocation of land resources for similar interventions, the projects should engage with community leaders, the Chief in particular those who are the custodian of the land prior to project implementation as the land tenure system and eventual allocation of land may take more time than initially anticipated (up to 5 months or a year) in some Chiefdoms. This engagement should also consider having a budget for the payment of a cow as part of the "*kukhonta"* under Swazi Nation Land (SNL).
- The project team should consider conducting training of farmers on business principles and management as these apply to farming. This would enable the farmers increase their skills in record-keeping and tracking of the profits or losses made in the business.
- Management of the resources committed through the Government's Ministry of Agriculture (MOA) requires separation from the central treasury. This will minimise the undue delays associated with Government procurement procedures.
- Capital and financial resources is still required for procurement of more farming implements such as the No-till planter and boom sprayer that were reported to be on high demand yet only two (2) were purchased to service five (5) RDAs namely: Dumako, Mahlalini, Hluthi, Mahamba and Southern RDA.
- The Agriculture Climate Smart model used by the project should be strengthened and be rolled out to the other RDAs in the Region, fine-tuned for replication as a national model for vegetable and fruits production in Swaziland.
- The project team should consider procuring vegetable management software (e.g. Farm-Soft, Plan - A - Head) that will help in planning, traceability, vegetable produce output, harvest times and quantities, pack house operations and general profitability of the farming.

1.0: INTRODUCTION

1.1 Background

The Programme on Climate Change Adaptation and Mitigation in the COMESA-EAC-SADC Region was a five-year initiative that started in 2010 aimed at injecting Africa's unified Position on Climate Change into the post-2012, United Nations Framework Convention on Climate Change (UNFCCC) global agreement. This was to unlock resources for promoting strategic interventions that sustain productivity and livelihood improvements for millions of climate-vulnerable people in the Region. This programme was linked to the AU-NEPAD CC Adaptation-Mitigation Framework and its Investment Platform for Climate Smart Agriculture.

The project stems from the recognition of the seriousness of the challenge posed by climate change (CC), which was re-iterated by the African Heads of State and Government at the African Union Summit in January 2007. The African Heads of State and Government agreed that the countries in Africa should mainstream CC-A and CC-M into their developmental plans. Further, the African Heads of State and Government Summit held in 2009, in Sirte, Libya endorsed the African Common position on Climate Change which advocates for inclusion of Agriculture and Forestry in the Climate Change regime.

The Programme overall objective (Goal):

"*Impacts of climate change in the COMESA-EAC-SADC region are addressed through successful adaptation and mitigation actions which also build economic and social resilience for present and future generations*".

Specific objectives as outlined in the project document were to:

- Contribute to the adoption of key elements of the African Climate solution and mainstreaming of Climate Change in national planning.
- Support member states to access adaptation funds and other climate change financing sources and mechanisms through national investment frameworks for climate adaptation in agriculture, forestry and other land uses.
- Enhance adoption of Climate-Smart Conservation Agriculture in COMESA-EAC-SADC Region.
- Reinforce capacity in national research, training institutions and implementation of research programs.
- Implement COMESA Climate Vulnerability Assessments and Analysis.
- Apply Mitigation solutions in the COMESA-EAC-SADC Region with carbon trading benefits.
- Establish a regional catalytic facility to support investments in national Climate Smart Agriculture programs.

1.2 Programme Justification

The COMESA-EAC-SADC Region has experienced the climate change (CC) effects including increased frequency of extreme weather events, flooding, storms, and droughts. These developments have significant, socio-economic and political impacts, including effects on food production and water availability, posing serious threats on the Region's food production systems and its progress towards poverty reduction. The nature and extent of CC impacts not only hinder human development and environmental conservation, but also forms a major threat to human security at regional and national

levels. Climate change may also spark conflicts between and within nations as resources become scarce while disasters destroy livelihoods (SADC CC Programme, 2011).

Although it is widely recognized that CC affects the general population, its impacts are highly heterogeneously and greatly affect the resource poor and vulnerable groups, in particular women and children. These groups rely on local ecological resources, and coupled with existing stresses on health and well-being, limited access to credit and technology skills transfer for mitigation and adaptation measures, impacts of CC decreases their ability to adapt to the associated impacts. This leads to deepened degree of vulnerabilities and exposure to risks calling for adoption of innovative policies and technologies to instil community resilience.

1.3 Ministry of Agriculture: National Agriculture Marketing Board

The Ministry of Agriculture (MOA) has the responsibility of the development and promotion of appropriate policies and technologies such as CSA for ensuring food security. In fulfilling its mandate, the MOA functions through a number of departments and sections. The departments and sections within the ministry relevant to CSA are the Agricultural Research and Specialists Department, the Department of Veterinary and Livestock production Services and Agricultural and Extension Services. The Department of Agricultural Research and Specialists is responsible for identification of adaptable crop varieties that can be grown in the different parts of the country, as well as developing appropriate water management practices. The Department plays major role in undertaking research on agricultural techniques for CSA that includes restoration of cultivated organic soils and improvement of cropland management. On the other hand, the Department of Veterinary and Livestock Production Services has a role in improving livestock management and improving grazing land management. Services provided enable agriculture and extension promotion in crop production and adoption of farming systems and technologies that will assure increased and resilient food production.

The Ministry has four (4) parastatals that aim to assist in fulfilling its mandate of transforming agricultural production system from its prevailing subsistence mode to more commercially oriented production system through diversification in Swazi Nation Land (SNL). The parastatals are the National Agricultural Marketing Board (NAMBoard), National Maize Corporation (NMC), Swaziland Water and Agricultural Development Enterprise (SWADE) and Swaziland Dairy Board (SDB).

NAMBoard is a state owned enterprise established in 1985, designated to work with farmers and their communities countrywide to increase marketing opportunities and develop their businesses, facilitating production, processing, storage, transportation, and sale of agricultural products, in particular vegetables. NAMBoard was tasked with the implementation of the Up Scaling Climate Smart Agriculture Project in Swaziland from 2014 to 2016 by the MOA on behalf of the Swaziland Government. NAMBoard undertook the responsibility of ensuring implementation and reporting to UNDP and COMESA on quarterly basis ensuring that procurement of services and supplies to the project follows the procedures and subsequent reporting. NAMBoard has three (3) sections that facilitate achievement of the primary mandate and these are: statutory controls and the importation of scheduled agricultural produce into the country, Farmer Support and Development Unit that assist farmers to develop their farming businesses, and '***Encabeni'*** Fresh Produce Market which provides an outlet for produce by Swazi farmers. COMESA/UNDP was the major funder of the project while UNDP provided administrative support and received funds which were disbursed to NAMBoard. The UN agency further provided oversight monitoring and evaluation of the progress of achievements of the project.

1.4. Climate Smart Agriculture

Climate-Smart Agriculture (CSA) practices refers to technologies and systems that could be utilised by farmers to adapt to the effects of climate change (CC). CSA seeks to increase sustainable productivity, strengthen farmers' resilience, reduce agriculture greenhouse gas (GHG) emissions and increase carbon sequestration (Grieg-Gran, 2010). CSA promotes agricultural best practices, particularly integrated crop management, conservation agriculture, inter-cropping, improved seeds and fertilizer management, improved livestock management, improved grazing land management, agro-forestry, as well as supporting increased investment in agricultural research. CSA is broader than adaptation, and calls for more innovation and pro-activeness in changing the way farming is conducted in order to adapt and mitigate while sustainably increasing productivity (FAO, 2010). CSA practices proposes the transformation of agricultural policies and systems to increase food productivity and enhance food and nutrition security, while preserving the environment and ensuring resilience to a changing climate (Dumanski et al., 2006). Small scale farmers are among the front liners experiencing the impacts of CC because of their great dependence on the natural environment. Critical, is the need for adaptation measures through Climate Smart Practices to be employed to ensure mitigation of the effects of CC.

Climate change is already affecting Swaziland and the key sectors of her economy, in particular agriculture, food security, water and health. Some of the climate change impacts being experienced include: significant variations in precipitation patterns, higher temperatures and increase in frequency and intensity of severe weather events such as drought, floods and cyclones. These changes negatively impact agricultural yields, biodiversity, forest harvests and availability of clean water. Bearing the brunt of all these, are the majority of the rural poor (78%) and farmers who depend on climate-sensitive sectors such as farming, forestry and traditional fishing for much of their day-to-day needs, Manyatsi et al. (2014). The Government of Swaziland through MOA-NAMBoard, with support from partners (UNDP/COMESA) initiated the project Up-scaling Climate Smart Agriculture in Swaziland (CSA) Project 2014-2016 in response to the negative impacts of climate change, which brings a lot of uncertainty especially in agriculture production.

1.5. Project Objectives

The CSA project objectives were to: (i) study the development of a comprehensive water harvesting and conservation agriculture program and provide baseline information for existing water schemes in Swaziland, to increase food availability at household level through up-scaling of conservation agriculture; and (ii) improve the quality of life for at least 200 HHs directly (1200 beneficiaries) and more than 500 HHs indirectly through the sale and consumption of high value crops (including vegetables, pulses and sweet potatoes) in the project areas.

2.0 OVERALL EVALUATION APPROACH

The Terminal Evaluation (TE) of the CSA project is conceptualized along employment of four (4) constructs, effectiveness and efficiency in the delivery of the intended outputs and outcomes:

(i) **Effectiveness** as a planning construct identifies whether the issues that the projects intended to address have been defined correctly. The process identifies the issues, objectives, activities and resources under the project. It is the "what" of the project. The following constitute the planning effectiveness of the project:

- Identification and definition of Issue(s);
- Development of priorities for Government and the key institutions;

- Identification of the needs of the beneficiaries;
- Identification of stakeholders and the expectations of the stakeholders;
- Definition of objectives of the project. Ensuring the objectives were precise, verifiable and achievable. Establish the objectives, inputs, activities, outputs, expected outcomes and impact was logically linked;
- Use of local expertise, indigenous technologies and resources; and
- Quantity and quality of project inputs and outputs.

(ii) **Efficiency** as a planning construct implies whether the activities identified above have been performed cost-effectively or not. The optimum usage of resources including people, funds, infrastructure, equipment and other material is established. "Efficiency", therefore, in the planning phase defines the "how" of the project and includes:

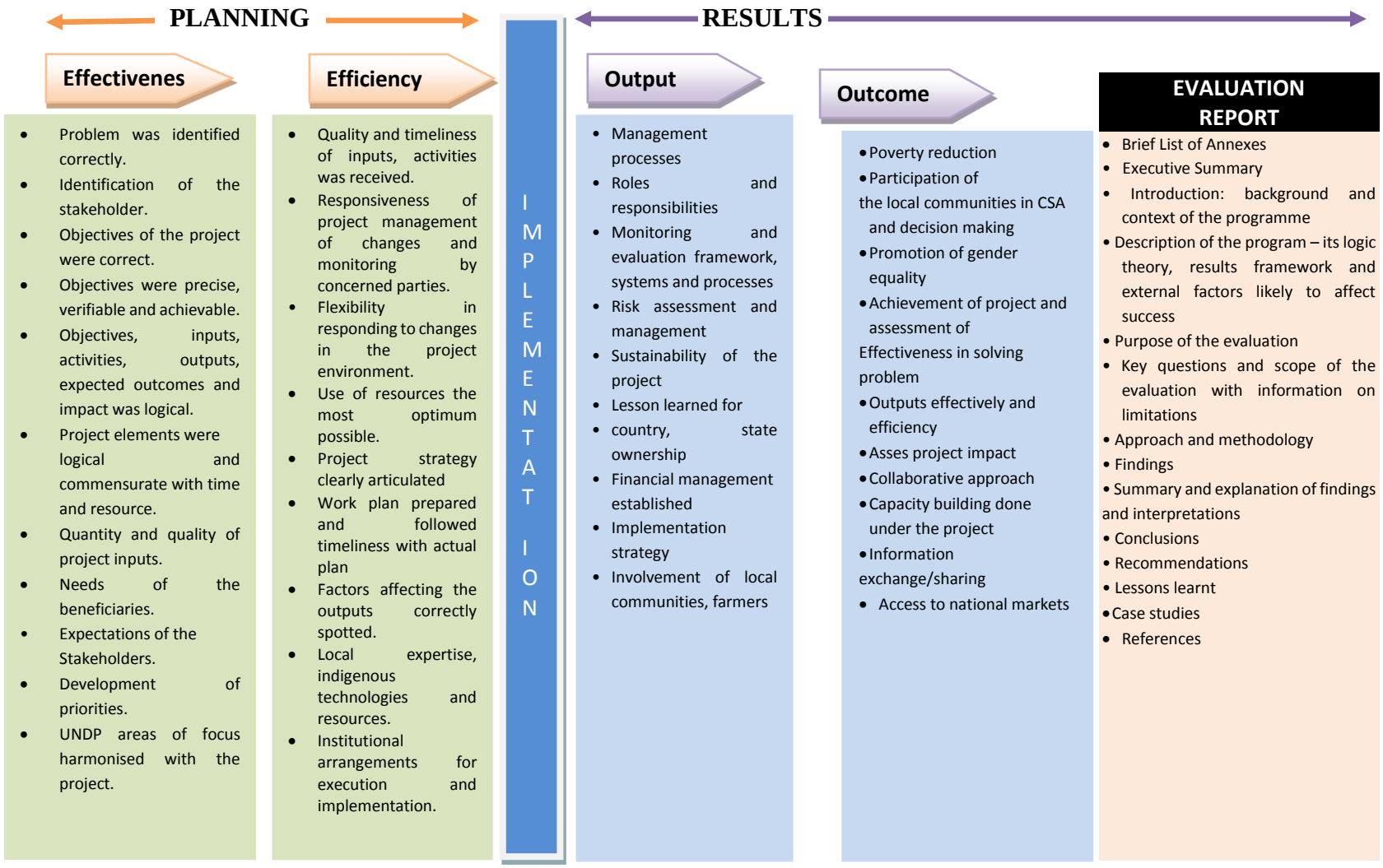
- Quality and timeliness of inputs and activities implemented;
- Responsiveness of project management to changes, monitoring by parties;
- Flexibility in responding to changes in the project environment;
- Use of resources the most optimum way possible;
- Cleary articulated activities and respective roles and responsibilities of stakeholders who would perform these;
- Work plan prepared and followed timeliness with actual plan;
- Risk-factors affecting the outputs correctly spotted;
- Project elements were logical and commensurate with time and resource; and
- Institutional arrangements for execution and implementation.

(iii) **Output** as an implementation construct is the immediate deliverable that results from the performance of activities that have been planned, for example, land converted to drip-irrigation.

(iv) **Outcome** as an implementation result from the performance of activities outputs leading to change in behaviours or practices of individuals or institutions, for example, CSA product or services enabled.

Figure 1 conceptualizes the evaluation processes which closely followed the Logical Framework (log-frame) approach on the project goals, objectives, outputs, activities and resources/inputs linkages.

Figure 1.Terminal Evaluation Conceptualization Climate Smart Agriculture Project



2.1. Purpose and Objectives of the Terminal Evaluation

The terminal evaluation (TE) for the **Up-scaling Climate Smart Agriculture in Swaziland Project** intended to provide a comprehensive overall assessment of the project implementation achievements and draw lessons that could improve the sustainability of benefits from the intervention. Based on the findings and conclusions, the evaluation is further expected to generate recommendations to address areas of improvement and possibly adjustment of the project's strategies and/or cooperation structure with a view to achieving similar results in the future.

2.2. Scope of Evaluation

The study was confined to smallholder farmers and crop cultivators on the SNL in the two (2) study areas namely Nkhungwini and Mpatheni. The overall objective was to conduct a comprehensive Terminal Evaluation for the UNDP and COMESA-funded Project that has been implemented from May 2014 and ended in March 2016.

2.3. Parameters of Evaluation

The progress of the project and its achievements were tested against the following criteria or parameters: **Relevance, Effectiveness, Efficiency, Impact and Sustainability** as described in Table: 1 below.

Table1. Evaluation Criteria

Criteria	Questions
Relevance	• How far does the project address a major need of the target population? Is it relevant to the needs of beneficiaries? • To what extent is the project coherent to possible ongoing efforts that address issues of CSA? • To what extent is the project strategy and the technologies used in its implementation appropriate with regard to expected outputs, outcomes and impacts? • Is the project's management and coordination structure appropriate? • Whether the project is relevant to COMESA/UNDP focal areas? • Whether a correct & accurate identification of target stakeholders?
Effectiveness	• To what extent has the project implementation so far been effective in achieving planned outputs and outcomes compared to project planning and design (i.e. the extent to which the project outputs have been achieved taking into account the indicators given in the project document? • To what extent is the project likely to achieve its intended objectives by project end? • What are the major internal and external factors influencing the achievement and non-achievement of the objectives and what corrective measures (if applicable) need to be taken?
Efficiency/ efficacy	• Are the objectives being achieved economically by the development intervention? How big is the efficiency or utilisation ratio of the resources used (Comparison: resources applied – results)? Were objectives achieved on time? • Was the programme or project implemented in the most efficient way compared to alternatives? • Are the resources that have been allocated to the project consistent with activities and intended outputs, outcomes and impacts? • Are they being used in a cost-efficient way?
Impact	• Does the development intervention contribute to reaching higher level development objectives (preferably, overall objective)? • What is the impact or effect of the intervention in proportion to the overall situation of the target group or those effected? • What has happened as a result of the programme or project? • What real difference has the activity made to the beneficiaries? • How many people have been affected?

Sustainability	• To what extent do beneficiaries and local stakeholders "own" the project? To what degree are they aware of and do agree with the project's strategy and objectives? • To what extent are the project structures and other stakeholders likely to ensure the sustainability of the project or an expected continuance in working together with regard to CSA or food security?) • What measures– if necessary –should be taken to enhance the chances of sustainability of the project's achievements after project end? • Are the positive effects or impacts sustainable? • What were the major factors which influenced the achievement or non-achievement of sustainability of the programme or project? • Extent to which government is willing to finance the project after its completion of the UNDP/COMESA funding

Each parameter is rated as highly satisfactory, moderately satisfactory, satisfactory, moderately unsatisfactory, and highly unsatisfactory. Annex I provides overall ratings for each of the parameters.

2.4 Methodological Approach

Consistent with the principle of inclusivity in the evaluation, data collection was largely through participatory engagements. During data collection phase in Nkhungwini and Mpatheni, the Evaluation Team gave opportunity to beneficiaries and project stakeholders to express themselves on activity implementation, achievements and on difficulties experienced during the project implementation. The evaluation also included an analysis of the project documents produced by the NAMBoard and its partners as a record of activity implementation. Other methodologies included administration guided questions through Focus Group Discussions (FDGs) and conducting conservations with Key Informants (KI):

Focus Group Discussions (FGDs): This method facilitated the analysis of the perceptions and attitudes, relevance of the project and an understanding of the service delivery at community level (efficiency) and how the community viewed the change the project has brought to the community (effectiveness), impact and sustainability of outcomes. Relevant data to answer the evaluation questions is summarised in the Evaluation Matrix.

The evaluation team conducted a total of five (5) FDGs and 4 KII with the following Groups/Individuals in the community:

- 4 FGDs –with CSA project beneficiaries (Men, Women Project Beneficiaries) this helped to explore the relevance, impact and appropriateness of the project to different sectors of the society.
- 2 KII –with Chairpersons of CSA farmers groups associations
- 1 KII- With Project Management staff (COMESA/NAMBoard)
- 1 KII- with Chief Agriculture Extension Officer (Manager) Southern RDA
- 1 FGD –with Agriculture Extension Officers in the Shiselweni Region (Hluthi, Mphatheni, Nkhungwini).

The Focus Group Discussions groups ranged from 8 to 14 members. With assistance from NAMBoard, the evaluation team mobilised the participants according to the gender beneficiary

distribution. The evaluation could not conduct FGD with the youth as planned as this group was not part of the CSA project.

Sample Survey

This was carried out through questionnaires administered to targeted HHs as per selected sample**.** Structured interviews with beneficiary of the program were used to randomly select project beneficiaries. This interview adopted a questionnaire which was developed and administered to project beneficiaries. The unit of analysis was the CSA practices at project site and household level. Given the time frame, a representative sample size was fixed at 100% of the beneficiaries. Therefore, the sample size for the household survey questionnaire was 109 beneficiaries. Sampling units (beneficiaries) were allocated proportionally according to the different communities. The sample was then selected purposively from each of the two (2) communities because not all community members were part of the CSA project.

Key Informant Interviews:

Interviews were conducted with the key stakeholders in the program that included Project Management staff, Chairpersons of Farmer Groups, Chief Agriculture Extension Officer Shiselweni RDA and Chairpersons of irrigation schemes. Where possible, key knowledgeable persons and case study households were also interviewed for the study. To identify the Key Informants for this evaluation, the team, with assistance from NAMBoard used a purposive sampling method where relevant people were approached and asked to participate.

Desk Review

Desk Review focused on general and specific documents produced by UNDP and NAMBoard such as quarterly reports, baseline studies, project reports and NGOs working on similar programs and national documents relevant to the program to answer the evaluation and the research questions. The documents reviewed included the Project Proposal, NAMBoard CSA Implementation Plan, COMESA CSA initiative documents, Project Action Plan, 2014 and 2015 Annual Project Plans, 2014 CSA Baseline Study Report, 2014-2016 Annual and Quarterly Reports and Project Steering Committee (PSC) meeting minutes. The review also included national documents namely the Draft Land Policy (1999), Comprehensive Agriculture Sector Policy of 2005, The National Food Security Policy of 2005, the National Agriculture Summit Action Plan of 2007, The National Irrigation Policy of 2005,National Capacity Self-Assessment Report on National Capacity Needs, constraints and Priorities for the Implementation of the Climate Change, Desertification and Biodiversity Conventions 2005, draft Climate Change Policy, National Climate Change Strategy and Action Plan (NCCSAP) 2014-2019.

Data Analysis

Qualitative data was collected through key informant interviews and FDGs. The qualitative statements of respondents were closely reviewed in order to systematically code the themes that they contained and the terms in which they were expressed. The evaluation team also focused on the terminologies that were used in discussing key topics, and analysed the meanings they conveyed. Data was categorized along the main themes and sub-themes for synthesis and analysis. Content analysis was compared between the different types of data collected for triangulation of information.

Quantitative data collected was coded and analysed using SPSS version 20.The process included; data cleaning/synthesis for accuracy and consistency, validation with key informants and selected

FGD participants and processed using software to prepare for report writing. The specific data analysis applied to the data included descriptive statistics such as percentages, frequencies, as well as comparative cross tabulation. The *first level* of analysis summarized the data into demographic disaggregates. The *second level* generated specific project indicators and cross tabulations were used to create links between the variables above. The *third level* involved triangulation of those variables between the data collection method and the qualitative methods. The results were also compared to available baseline data and relevant national statistics to help the evaluation team make conclusions.

The evaluation used a matrix to record and for each evaluation question/criteria, information and data collected from different sources and with different methodology. In addition, a rating of outcomes, efficiency, sustainability relevance and impact was also conducted.

Field testing of instruments

The evaluation team dedicated one (1) day to field testing of instruments i.e. questionnaire, KI interviews and FDGs. The instruments were pre-tested in a community which is not under the projects areas. Five (5) enumerators were hired to conduct the pre-testing of the tools in randomly selected participants. All modifications that needed to be done were implemented after the field testing. Such modifications were incorporated to the original tools and adopted for field work

Direct observation: was also used primarily to observe the existence of vegetable gardens and the equipment, Training / Attendance Records, Monitoring Visit Reports and layout of drip irrigation scheme.

Ethical Considerations

The following ethical considerations were observed to ensure that basic human rights of individuals were not violated in the course of the evaluation.

a) **Informed consent:** A consent script was used to obtain informed consent for participation in the study. The consent was obtained before interviews and was preceded by an explanation of the study and its purpose. Participants who were not willing to participate were not coerced or forced. No identifying information was collected without consent.

b) **Privacy and Confidentiality:** Privacy was ensured during interviews by ensuring that participants were interviewed where they cannot be overheard, as agreed with HH members and their participants. Data collected was kept confidential for submission to NAMBoard after the evaluation. Training of research assistants emphasized the importance of privacy and confidentiality. Reporting ensured that findings cannot be linked to individuals without their prior consent.

2.5. Evaluation team

The evaluation was conducted for one month by the national consultant with the assistance of ten (10) enumerators and support consultants who have experience in evaluating development projects and worked on the issues around CSA. The evaluation began mid-June 2016 with a series of meetings to discuss the ToR with the UNDP and NAMBoard project staff for a common understanding of objectives and outcomes, and was concluded August 2016.

2.6. Limitations / Constraints

While the evaluation process was planned in great detail, there were some processes related constraints and challenges which may have in some respects affected the outcome and quality of the findings. The major limitations were as follows:

- Time constraint was a significant factor as there were challenges for the evaluating team to find time with key informants, project partners and implementers of the project.
- Inadequate coordination of the schedules of the various partners during the evaluation process. There were several activities simultaneously running, requiring the participation of the same management representatives and thus, the consultant could not access a few key informants as they were not available at the time of data collection. These included chairperson for Nkhungwini Farmers Group and Ministry of Agriculture (Southern RDA Manager).
- The strength of programme reviews and evaluations is usually enhanced by the availability of records of past monitoring and performance trends. Inadequate monitoring information and data tracking systems within NAMBoard constrained the opportunities for in-depth interrogation of the issues, based on credible programming records.

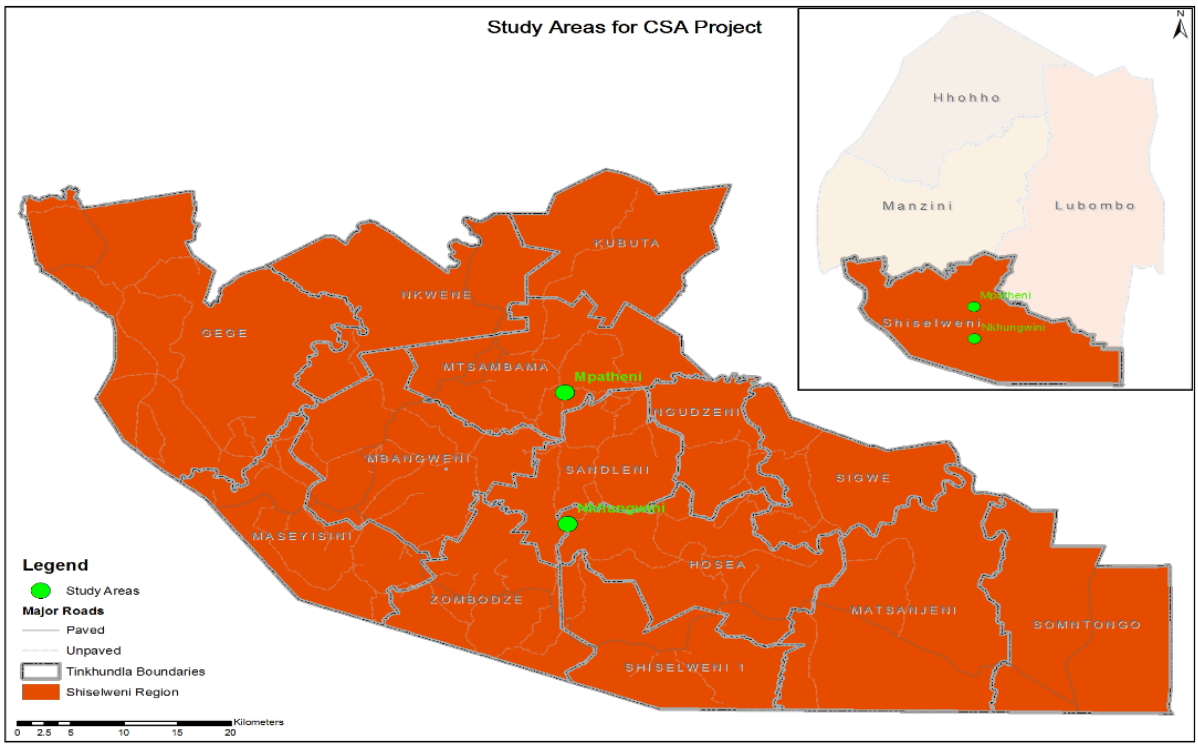
4.0. SITUATIONAL ANALYSIS

Swaziland is a landlocked country bordered by South Africa in the north, west and south and by Mozambique in the east. It lies between latitude 25^0 and 28^0 and longitude 31^0 and 32^0 and it covers an area of 17 364 km^2. It forms part of Maputo-land centre of plant diversity which is reported to constitute the greatest biodiversity in Southern Africa (SEAP, 2002, GOS, 1977). The country has been ecologically divided into four (4) zones and these are: Highveld, which forms the upper part of the large escarpment comprising of steep slopes, interlocking spurs, hills and valleys; Middleveld, which consists of strongly eroded plateau remnants, eroded bits and pieces and hills intermediate with the general escarpment; Lowveld, which is generally a predominant zone of escarpment characterized by strongly eroded foot slopes; the Lubombo Plateau, characterized by Lubombo Mountains with steep escarpment bordering the Eastern Lowveld.

Project Area

The CSA Project area was located in the Shiselweni Region of Swaziland between the 26°29 latitude and the 31°27 longitude. The project area is situated in the region of Shiselweni South-West of Swaziland, bordering the KwaZulu Natal Province of South Africa and accounts the economically poor, driest and least developed regions of the country. The evaluation was conducted in two (2) rural areas namely Nkhungwini and Mpatheni. Nkhungwini is under the Chiefdom led by *Umtfwanenkhosi* Fipha whilst Mpatheni falls within the Kontjingila Chiefdom under the Chief *Inkhosatana* Gelane who is acting for a substantive Chief yet to be installed. Mpatheni is under the Southern RDA while Nkhungwini is under Hluthi RDA of the Ministry of Agriculture, see Map 1.

Map 1. Study areas under the CSA project



Comprehensive Agriculture Sector Policy of 2005

The objectives of the Comprehensive Agriculture Sector Policy of 2005 include the increase of agricultural outputs and productivity and to ensure sustainable use and management of land and water resources. The broad objective is to provide clear guidance on policy options and measures necessary to enhance sustainable agriculture sector development. It considers all the sub-sectors of agriculture: rain-fed crop, irrigated crop, livestock, research, extension, marketing and credit. The policy also recognises the need for rapid climate change adaptation strategies to safeguard crop and livestock production, however, it falls short of proposing specific concrete measures to attain that.

The National Food Security Policy of 2005

The National Food Security Policy of 2005 is aimed at addressing the threats and opportunities relating to food security in Swaziland. The policy introduces the status and framework of food security in line with the internationally accepted definition of food security "Food security is achieved when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life". The policy provides key strategies to be developed and implemented that will address food insecurity and poverty reduction, The policy recognises the effects of drought that bring about seasonal and inter-annual instability of food supplies. It advocates for an early warning system (EWS) that include agro-meteorological modelling and integrated multi-disciplinary crop forecasting techniques.

Draft National Climate Change Policy, 2014

The goal of the draft National Climate Policy is to build a climate resilient nation and its economy and facilitate low carbon development in a manner that promotes national priorities of inclusive growth and sustainable development. The objectives of this Policy include: enabling a framework for effective implementation of climate change adaptation and mitigation measures, enhancing climate-resilient and inclusive low-carbon green growth investments, promoting public education, information sharing and awareness on climate change, provide mechanisms for coordination and building of partnerships in addressing climate change, establish and maintain an effective institutional framework to mainstream climate change responses into relevant sectors and into planning, budgeting, decision-making and implementation, at both the national and community levels, and incentivizing private sector involvement in building climate change resilience and engaging in low carbon development opportunities.

National Climate Change Strategy and Action Plan (NCCSAP) 2014-2019

The Government with support from the United Nations Development Programme (UNDP) and the Common Market for Eastern and Southern Africa (COMESA) developed a National Climate Change Strategy and Action Plan (NCCSAP) for the period 2014-2019. The main objective of the NCCSAP is to provide for a systematic approach to deal with the adverse effects of climate change in a manner that contributes to the achievement of sustainable development, eradication of poverty and the enhancement of adaptive capacity for the country and her people. The NCCSAP is the implementation framework for the CC policy.

Policy Analysis

In a country and society where food security and vulnerability to climate change is a challenge, there is no doubt that the CSA project was timely, if not long overdue. The CSA project remained a very relevant project aligned to national policies and plans for reducing rural poverty and increasing availability of food for household consumption in the country. The CSA project was unique in the sense that it dealt with several aspects including water conservation strategy (drip irrigation), increasing household incomes to alleviate poverty, conservation agriculture and adaptation to climate change, in a holistic manner. Learning from the experiences from other countries outside SADC, the evaluation team concluded that the CSA project is the first of its kind in Swaziland and it needs to be promoted, documented, shared at all levels and replicated beyond the region.

5.0 FINDINGS

5.1. Project Effectiveness

The project has made significant strides towards achievement of objectives and outcomes as indicated by the findings of the evaluation in the following section. The section below presents some emerging successes in the project, and elements which form a base for further programme development.

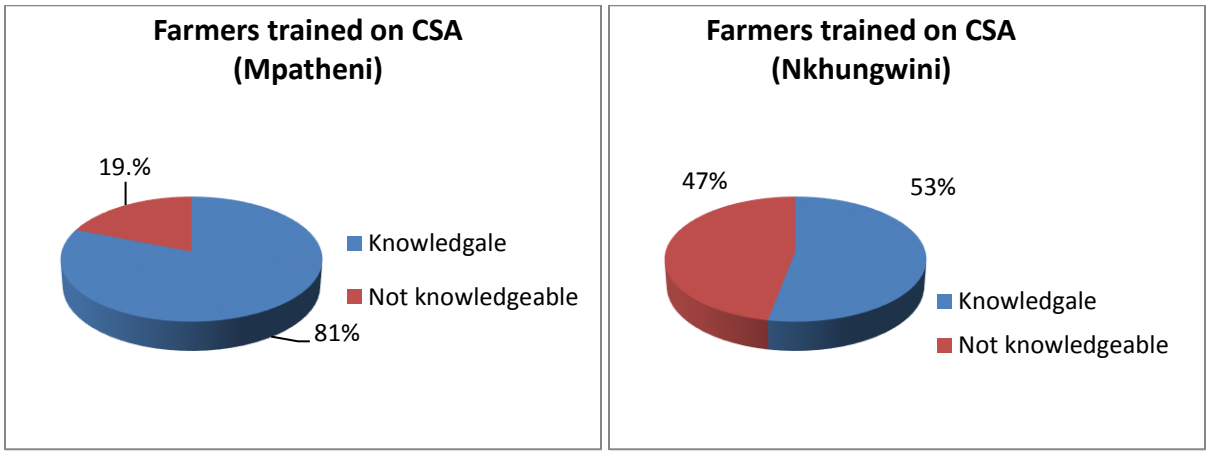
5.1.1. Capacity Building for Extension Staff and Farmers in CA and other CSA approaches

Training assists community members acquire or upgrade vocational skills and enable them to conduct income generating activities. Training further helps farmers to incorporate latest scientific advances and technology into their daily operations (FAO, 1993). In the project under review, farmers were trained on CSA for climate change adaptation, mitigation and while increasing the productivity for purposes of resilience. These activities included the provision of farmers with loans/start-up capital, training of farmers on skills whilst giving others agricultural inputs. In the project under review, a total of 406 farmers have been trained under up-scaling climate smart agriculture project, with special emphasis on mechanization of Conservation Agriculture Technologies, which in turn was linked to inclusion in sustainable value chains. The findings from the progress reports further indicate that 93 "***Champion*** **Farmers"** have been trained on CA and vegetable production principles. Lead farmers were trained and these farmers continue to guide and recruit new farmers into utilization of CSA methodology. One participant concurred by saying;

> *"Yes my daughter, we were taught by NAMBoard and extension officers at* ***Khula*** *guest house, we were going by groups we didn't go once. And the training on CSA was beneficial in that it has helped to improve our production. Before the training we were not aware of climate change and climate smart agriculture, we just saw it as an act of God , but now we understand it much better" (Member of women's farmer group)*

Eighty one percent (n=68) of the farmers in Mpatheni reported to have knowledge and training on CSA whilst 53% of farmers at Nkhungwini revealed that they had knowledge and training on CSA as result on involvement in the project, see Figure 2.

Figure 2: Knowledge and training on CSA in the project areas



Source; Field Work, (2016)

Table 2: Evaluation of knowledge on CSA

Areas	Indicator Summary	Baseline	Variance	Evaluation
Mpatheni	Proportion of farmers with CSA knowledge	34%	47%	81%
Nkhungwini	Proportion of farmers with CSA knowledge	25%	28%	53%

The evaluation observed an increase at Mpatheni by almost half (47%) in the proportion of farmers knowledgeable on CSA as result of the training. Similarly there was an increase by 28% in the proportion of farmers knowledgeable in on CSA, at Nkhungwini, due to training. The target of 70 farmers was exceeded due to more "***champion*** farmers" registered in the regional roll over the past year. The trained farmers continue to guide and recruit new farmers into utilization of CSA methodology (See Table 2).

> *"Since rainfall is very scarce, NAMBoard has helped us to know that we need to grow crops that can survive under drought conditions. I now grow maize hybrid seeds that are early maturing". Respondent from Man FGD*

5.1.2. Proportion of farmers trained on CSA technologies

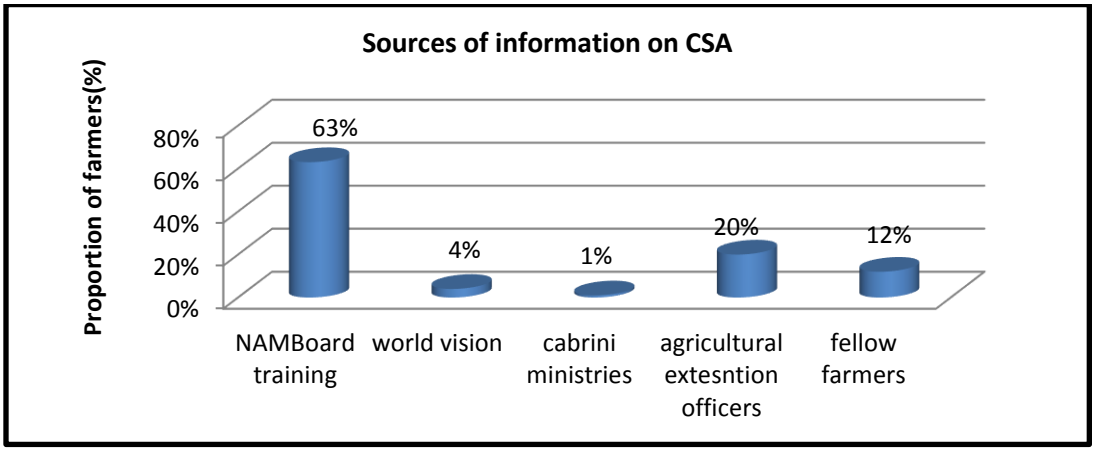
Climate Smart Agriculture technologies contributes to more innovation and pro-activeness in changing the way farming is done in order to adapt and mitigate while sustainably increasing productivity (FAO, 2010). Climate Smart Agriculture practices propose the transformation of agricultural policies and agricultural systems to increase food productivity and enhance food and nutrition security while preserving the environment and ensuring resilience to a changing climate (Dumanski et, al. 2006). Such technologies have benefits which include: reduced costs of machinery use, reduced need for agro-chemicals, reduced soil compaction, improved timing of planting and improved farm labour productivity (World Bank, 2012; FAO, 2013). It also increases water use efficiency, reduces land and water pollution and leads to reduced emission of greenhouse gases (Dumanski *et. al.,* 2006).It further builds up soil organic matter, improves soil fertility and stimulates soil microbial activity (FAO, 2001).

A total of 406 farmers were trained in different technologies that enhance Climate Smart Agriculture in the fruit and vegetable growing in the sector, with linkages to the value chain managed by the National Agriculture Marketing Board (NAMBoard). Training included; input selection, production, crop management, harvesting and post-harvest handling for quality enhancement. Furthermore, farmers were able to visit commercial enterprises both small and large scale that practice CSA in a profitable manner.

As part of the evaluation, the study further ascertained the sources of the knowledge along the CSA technology in the project areas. Farmers cited (figure3) among others; Agricultural Extension

Officers (20%), NAMBoard training (63%), ***Champion***/fellow farmers (12%), World Vision (4%) and Cabrini ministries (1%) as sources of CSA information. All sources cited by the farmers were of critical importance particularly as advocates for fighting against hunger at household level and also important to be used as building blocks for strategies to upscale the adoption.

Figure 3: Information sources on CSA



Source; Field Work, (2016)

Furthermore, the proportion of farmers who reported to have gotten information from other sources either than those organized by NAMBoard was only 5% i.e. World Vision and Cabrini Ministries.

Table 3: Evaluation of Sources of information on CSA

Indicator Summary	Baseline	Variance	Evaluation
Proportion of farmers who sourced information on CSA from training	33%	30%	63%

The evaluation, in Table 3, observed an increase by 30% in the proportion of farmers who sourced information on CSA from the training by NAMboard. Furthermore, the availability of extension officers for consultation by farmers was significant and necessary for knowledge translation through peer support.

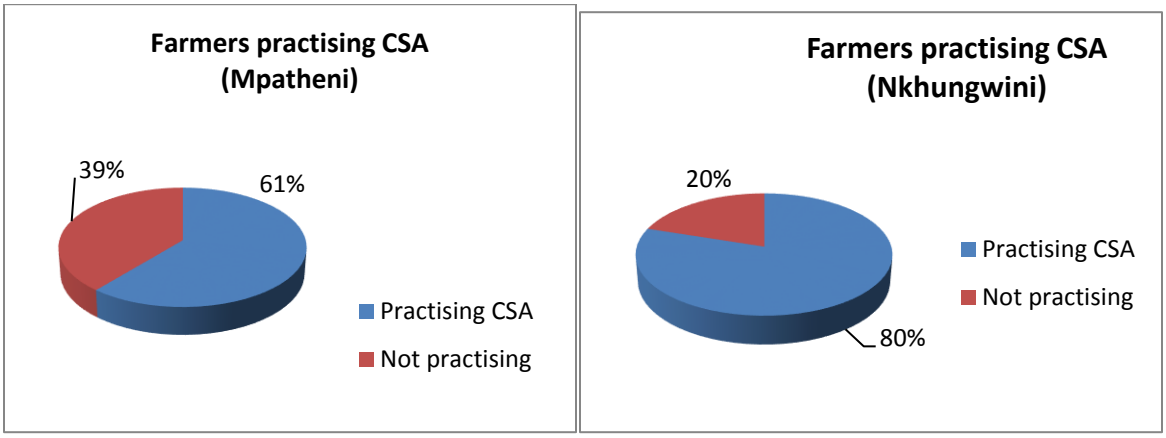
5.1.3 Proportion of Farmers Practicing Climate Smart Agriculture

Climate Smart Agriculture contributes to the achievement of sustainable development goals as it integrates the three (3) dimensions of sustainable development (economic, social and environmental) as well as addressing food security, climate and environmental challenges (Climate Smart Agriculture, Forestry and Fisheries, FAO, 2015).

In the project under review, NAMBoard capacitated the farmers on different types of climate smart agriculture practices such as contour terracing, the use of manure, tree planting and crop rotation.

The knowledge of CSA should translate to practice, therefore farmers were asked on whether they practice it or not. Sixty one percent (61%) of the farmers in Mpatheni indicated practicing at least one climate smart type of agriculture whilst at Nkhungwini 80% of the farmers revealed that they practice Climate Smart Agriculture techniques. Various practices such as use of manure, contour terracing, hybrid seeds, "cut and carry methods", water conservation, crop rotation and agro-forestry (tree planting) were cited by the farmers. The uptake of the CSA practice is shown in Figure 4 below:

Figure 4: Level of CSA practicing in the study areas



Source; fieldwork, 2016

Table 4: Evaluation on Practising of CSA

Indicator Summary	Baseline	Variance	Evaluation
Proportion of household practicing some Climate Smart Agriculture practices	15%	43%	58%

The evaluation team observed a significant change (43%) in the proportion of farmers practicing CSA from the baseline data as shown in Table 4. Following training on CSA by NAMBoard, farmers were supported to adopt conservation agriculture, as cited in the reports, thus enhancing coverage and the increasing number of farmers reached through training. This was further revealed in the FDGs where one farmer with concurrence from others said:

> "*Since we have knowledge on CSA, we practice it on vegetables and in maize growing in our various fields at home. Ever since I started to be part of the CSA project practicing the technique has been the way. Others in the community have also followed suit, so it is now a well-recognized practice in whole community" – (Respondent Man, FGD)*

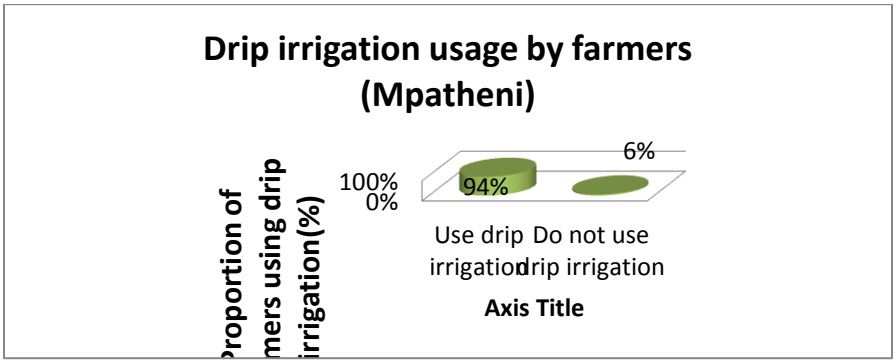
The downstream production for farmers practicing on over 32ha of land was enhanced by the rehabilitation of a cold storage facility as part of cold chain management. The facility managed by NAMBoard on behalf of the farmers enhances product shelf life and indirectly increases economic activity in the production area.

5.1.4. Conversion of land from open channel to drip irrigation

Drip irrigation technology offers several advantages as opposed to open water irrigation. Mhazo (2003) describes drip irrigation as one technology that saves water and fertilizer by allowing water to drip slowly to the roots of the plants either into the soils surface or directly onto the root zone. It further maximize the use of available water. It avails very little water to weeds and ensures maximum yields given the high efficiency in use of fertilizers. It also promotes reduction in soil loss through erosion.

In the context of the project under evaluation, an improved irrigation and efficient infrastructure has been put in place for 32ha land for fruit, vegetables and other high value crops production. The 32ha Drip Irrigation System has been installed and ready for use by farmers in targeted sites particularly Mpatheni. Furthermore, contouring of the area has been completed and hydrants installed. Delays in upstream water infrastructure construction delayed installation of the drip system but most of the layout has been done as observed by the evaluation team at Mpatheni. The drip installation of an outfield filter has been commissioned. The evaluation team further observed that progress at Nkhungwini is the drip irrigation in the area has not been installed as per the plan given a decision made by the Project Steering Committee (PSC) to focus on Mpatheni. The installation of drip irrigation, demonstrates water saving technologies, which is a major part of climate smart agriculture. The irrigation, it is expected to enable farmers produce over 500mt of vegetables per annum, and in turn generate over E3Million (USD 300,000) for farmers in the project area as indicated in the project progress report. The installation of the drip irrigation has the potential of generating at least 100 seasonal jobs for functions such as planting, crop management and harvesting as envisaged by the project team.

Figure 5: Proportion of farmers using drip irrigation



Source; Fieldwork, 2016

Ninety four percent (n=79) of the farmers in Mpatheni scheme reported using drip irrigation in their vegetable production as shown in Figure 5. Drip irrigation, which is the most efficient and effective method of irrigation that is driven by COMESA-EAC-SADC Climate Change Programme has been implemented at Mpatheni as one approach to resuscitate the irrigation schemes in the study area. Based on findings of the baseline study conducted (2014) no farmers were found to be using drip irrigation at the time. It was noted that the furrow and sprinkler irrigation systems are wasteful of water especially in the absence of quantification of the amount of water used. It was therefore necessary to introduce the drip irrigation scheme as shown in Plate 1 below.

Plate 1. Drip irrigation installation (Mpatheni)

Table 5. Evaluation on Usage of Drip Irrigation

Indicator Summary	Baseline	Variance	Evaluation
Proportion of farmers using drip irrigation as part of CSA practices.	-	-	94%

The evaluation team observed a massive up surge (94%) in the proportion of farmers using drip irrigation in their vegetable gardens (see Table 5). This is an indication that farmers are now aware of the importance of saving water, installation of drip system and its advantages. Information solicited through individual interviews highlighted that beneficiaries were reached and taught about drip irrigation and its advantages to farming. However they indicated that technical know-how is lacking with regards to servicing of equipment. The evaluation suggested that farmers should undergo further training on servicing the drip irrigation equipment for sustainability purposes.

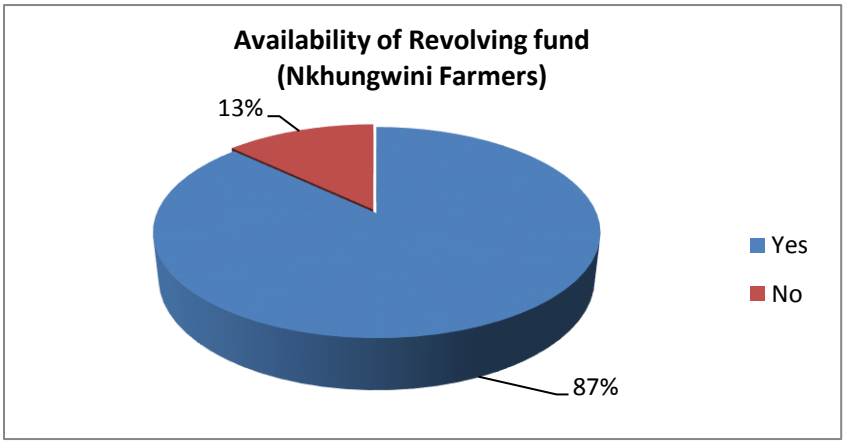
"*When we were trained at Khula Guest House, one of the topics was on drip irrigation and its importance to farming. We learnt that it is one of the best methods of irrigation because it saves water" Chairperson of Farmers Group.*

5.1.4 Establishment of a Revolving Fund

For the success of the project, a revolving fund had to be established. The project, had a total of E100, 000 (USD10, 000) to assisting a total of 30 farmers with productions inputs. Quarterly reports further show that the revolving loan scheme benefitted 24 farmers from Nkhungwini. A total of E68, 359.00 has been disbursed to farmers in form of input loans. Farmers from Mpatheni have not benefitted (at time of evaluation) from the loan scheme as they were awaiting the installation of the drip irrigation.

Furthermore, NAMBoard has been actively engaging financial institution to enhance access to production finance. To this end at least 50 farmers have been linked to financial institutions, with farmers assisted with an estimated E3,500,000 (USD350,000) over the past two (2) years. The portfolio is growing as financiers increase their confidence in NAMBoard. Currently the Finance Corporation (FINCORP) has the largest share of the farmers (80%), with two (2) commercial banks (Nedbank and Swazi Bank) financing 20% of the farmers. Under the arrangement, farmers are loaned money and repayment is made at source when farmers sell their produce to the market. This reduces the risk from the financier and takes care of collateral requirements.

Figure 6: **Establishment of Revolving Fund**



Source; Fieldwork, 2016

Eighty seven percent (n=13) of the farmers in Nkhungwini reported to have had access to the revolving fund for the project as shown in Figure 6. It should be noted that not all farmers have been able to access the revolving fund resources. The revolving loan has been used by farmers to kick-start the production process. The provision of an **agricultural input credit facility / fund** has made it easy for the farmer to access sufficient agricultural inputs timely. Through the credit fund, farmers were supplied with fertilizer, LAN, seedlings, seeds and pesticides. This protects the farmers from the high financial interest rates offered by commercial financial institutions. The evaluation would have expected that the revolving loan kick started at the same time for both study.

Table 6: Evaluation on Availability of revolving fund

Indicator Summary	Baseline	Variance	Evaluation
Proportion of farmers indicating availability of revolving fund under Climate Smart Agriculture project	-	-	87%

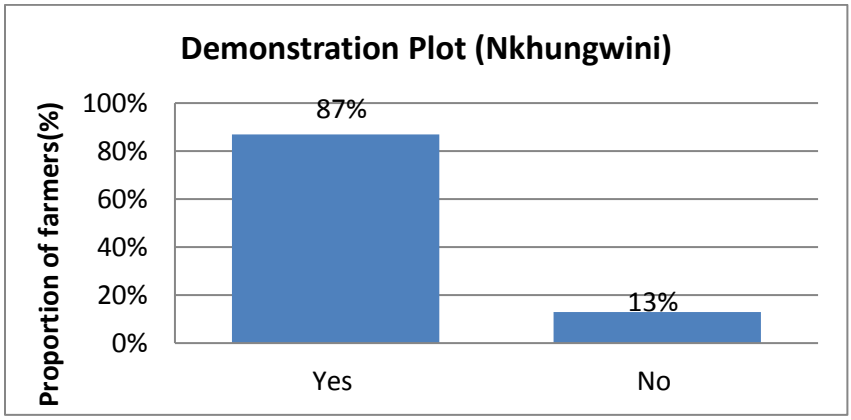
The evaluation team observed that 87% of farmers who indicated that there is a revolving fund (see table 6). The evaluation team could not do further evaluation as there was no baseline figure on this indicator.

5.1.5 Demonstration Plots

Demonstration plots and seed multiplication are one of the best methods to improve yields. These methods are used as tools by the Extension Worker to effect desirable changes in the behaviour of rural masses, arrange the best learning situations and provide opportunities in which useful communication and interaction takes place between Extension Workers and farmers (Ayesha Khan etal.2009). Extension methods like demonstration plots, seed multiplication programme and field days are some of the major weapons for introducing the findings of modern research in agricultural practices to increase agricultural production in particular and uplift of the rural masses in general (Afzal 1995). Extension methods are an effective means of communication to transmit knowledge and skills, and the interested may easily see, hear, and learn the things conveyed by extension workers.

One demonstration plot was established against the two (2) planned due to late agreement on land for demonstrations and the need for fencing, which further increased the costs. In the context of the project under review, one demonstration plot has been established at Nkhungwini, where cowpeas and maize were planted as part of CA demonstration.

Figure 7: Existence of demonstration plot as observed by farmers (Nkhungwini)



Source; Fieldwork (2016)

Eighty seven percent (n=13) of the farmers in Nkhungwini reported to have a demonstration plot for the project (See Figure 7). The farmers indicated that the demonstration plot is of importance as they learn through practice and observing. Demonstration, due to its practical nature, is a useful tool to introduce a new technology and practice for a large group of interested people and it needs fewer resources.

Table 7: Evaluation on Existence of demonstration plot

Indicator Summary	Baseline	Variance	Evaluation
Proportion of farmers indicating availability of demonstration plot under Climate Smart Agriculture project	-	-	87%

5.1.6 Exposure and Exchange Visits

Seeing is believing – Information dissemination pathways documented to have impact in technology transfer and adoption includes farmer field school, farmer trainer (para-professional), field days, extension communication products (fliers, manual, and booklets), radios and classroom trainings. Generally, the most preferred dissemination approach by small scale farmers are field days, farmer training of trainer, famers field school and fellow farmers whereas the least preferred is print materials, radio, and *baraza i.e.* village meeting (Murage et al., 2010). Murage et, al (2010) reported that farmers with low education level preferred field days. Under the CSA project, 65 farmers were sent on an exchange visit to Ngonini, Mavulandlela and Sdemane to learn about fruit tree production, global gap practices and packages to better understand value chain practices and concepts. Farmers have been taken on exchange visits for better appreciation and to see best practices.

5.1.7 The Pack House and Cold Room

The development of a pack house (holding facility) to ensure freshness of vegetables before they are transported to '*Encabeni'* and other markets has been one of the significant achievements in the projects (see Plate 2). The pack house initially built by International Fund for Agricultural Development (IFAD) and Government in 1984 and later became idle was then renovated by NAMBoard for the use by farmers under the CSA project. The rehabilitation of the project structures was facilitated through Government/NAMBoard funding. The Government of Swaziland provided a total of E145, 000 for construction of the holding facility. The facility offers the farmer an opportunity to protect the produce quality and prevent loss of the produce that use to rot in the field. This also makes the produce collection logistic more organized and efficient. It further prevents farmers from staying in the farms until late hours waiting for transport to collect produce and exposing them to criminal activities and other natural hazards like malaria carrying mosquito bites. Furthermore, its proximity to the /production areas/farmers has significantly reduced transport costs incurred by farmers.

Cold storage facilities are also crucial in the minimization of post-harvest losses in the vegetable production. The vegetables are put under controlled temperature conditions to prevent spoilage**.** The cold chain facility is run by NAMBoard staff including the set up and maintenance of amenities such as water and electricity. This is to ensure that there is quality handling and that farmers' produce is well graded for good returns on investment. The establishment of cold storage further assists to extend the shelf life of vegetables. The cold storage facility has aided in reducing the overstaying of produce on the field even when ready for harvest. (See Plates 2 and 3).

Plate 2. Pack house at Mpatheni

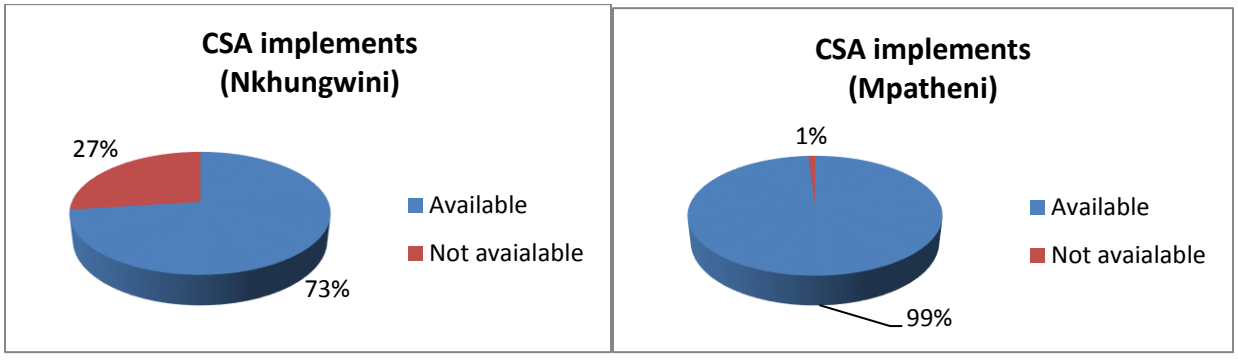
Plate 3. Cold room at Mpatheni

5.1.8 Proportion of farmers who adopted Mechanical Equipment for CA

Factoring of mechanical equipment and appropriate implements contributes to best practice in CSA technology transfer. It aids in the contribution towards minimum tillage activities during planting, while it also reduces the cost of machinery use for ploughing (Manyatsi, 2012). Such equipment includes; the tractor drawn ripper, boom sprayers and the mechanical jab planters.

A total of 406 farmers have been trained under up scaling climate smart agriculture project, with special emphasis on mechanization of CA Technologies, which in turn was linked to inclusion in sustainable value chains. After the training farmers were introduced to the implements and have since adopted the implements in their farming. Furthermore, 2 boom sprayers were purchased together with 4 tractor drawn rippers (4) and 4 Boom Sprayers (see Figure 8). The equipment was purchased with the help of the MOA.

Figure 8: Adoption of mechanical equipment in the study areas



Source; fieldwork (2016)

Seventy three percent (n=15) of the farmers at Nkhungwini and ninety nine (n=83) in Mpatheni reported to have farming implements provided under the CSA project and are using the implements in their production activities. The mechanical equipment for CSA has been of benefit to the farmers in the two areas as it services all their farming needs.

Table 8: Evaluation on usage of mechanical equipment

Area	Indicator Summary	Baseline	Variance	Evaluation
Mpatheni	Proportion of farmers indicating usage of mechanical equipment under Climate Smart Agriculture project.	-	-	99%
Nkhungwini	Proportion of farmers indicating usage of mechanical equipment under Climate Smart Agriculture project.	-	-	73%

The evaluation team observed that 99% of farmers (Mpatheni) and 73% (Nkhungwini) indicated that there is mechanical equipment in the area useful in their farming (see table 8). The evaluation team could not do further evaluation as there were no baseline figure in this indicator except that some farmers indicated that they used tractors for tillage of soil prior to the CSA project inception. One respondent however in the focus group discussion who decried that CSA implements are enough. This is what she had to say:

"The farming equipment is available to us to use, as it is not enough as we have to wait until the first rains have passed. If only we can have more implements, then we can plough as early as possible before the first rains vanish "Women respondent, FGDs

5.2 Project Impacts

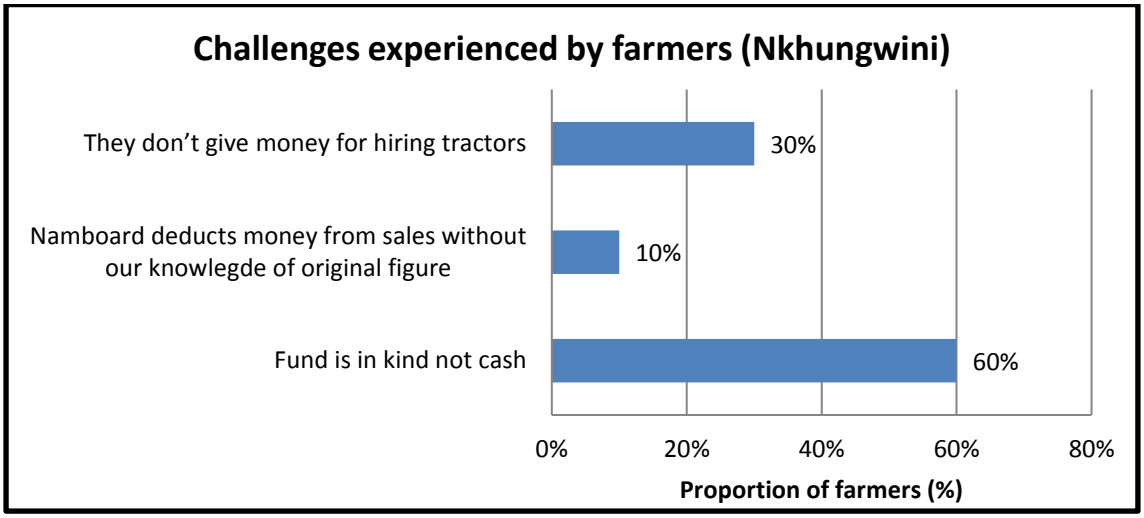
Proportion of farmers who reported to have access to credit (loan)

Revolving funds schemes are designed and established for the purpose of carrying out specific activities and institute basis under which financing for the cost of goods or services. Farmers are advanced loans in form of inputs for their farming activities. The loans are payable after harvesting period and deducted by NAMboard from the sales made by farmers. Not all farmers have been able to access the funds as currently the main site (Empatheni) has just completed drip irrigation installation. Only 24 Nkhungwini farmers have accessed the revolving fund with a total of E68, 359.00 disbursed to farmers. The fund has helped the farmers to kick start production process for vegetables.

The study participants were asked what challenges they have with the revolving fund at Nkhungwini. The results in Figure 9 Indicated that sixty percent (60%) of the farmers (n=9) at Nkhungwini reported to have experienced challenges with fund because it only provides loans in kind not in cash. Almost one third (30%) of the farmers lamented that the fund does not provide credit (cash) to

farmers to use in hiring the tractors in case there is urgent need. Very few 10% decried that NAMBoard makes deductions to pay back loans from sales without farmers' knowledge of the actual total sales figures.

Figure 9: Challenges of the fund as observed by farmers



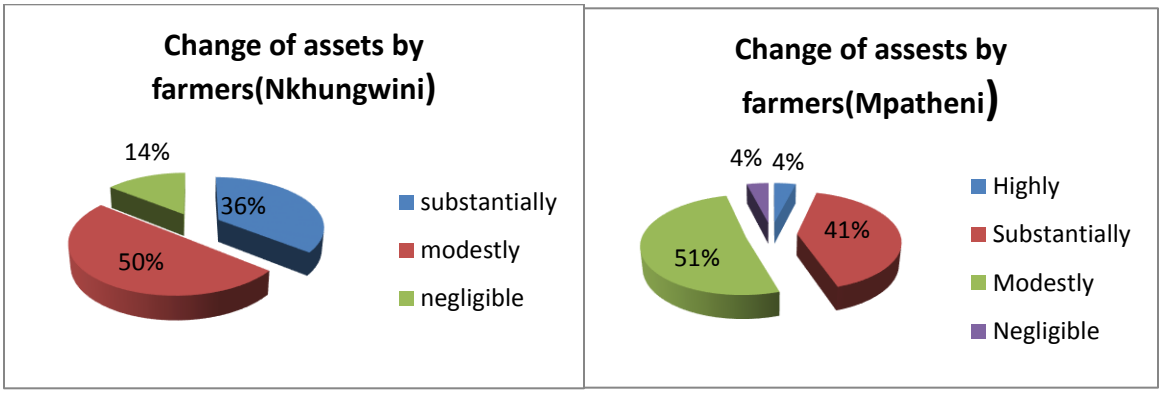
Source; Field Work, (2016)

5.2.1 Proportion of farmers who reported to have Changed Household Assets

Farming as an activity is not only meant to increase household food production but is also meant to uplift the famers from poverty. The monetary savings acquired from the sale of the produce is mainly used to purchase other assets that are meant to improve assets. The savings are also used to establish other small scale businesses as well as improve the household welfare. Farming projects/schemes also help communities to fight poverty; and increases their ability to meet basic needs such as food, shelter, education and health needs (WVS, 2015).

The project participants were asked if they have acquired new assets as a result of being part of the CSA project. Forty one percent (41%) of the farmers in Mpatheni indicated that they have substantially acquired new assets since joining the CSA project whilst more than half (51%) revealed that they have modestly acquired new assets due to the CSA project. But very few (4%) indicate that they have highly acquired new assets as a result of the project. Similarly, the farmers at Nkhungwini reported to have acquired new assets as a result of the project. Half (50%) of the farmers revealed that their assets have changed modestly as a result of the project whilst more than a third (36%) reported that their assets have substantially changed due to the benefits of the project. Only a few (14%) indicated a negligible change in assets as shown in Figure 10. Analysis of the findings show that the CSA project has had an impact in the lives of the farmers particularly because they managed to purchase new assets with money acquired from activities of the project. This indicates a positive impact in the lives of the farmers.

Figure 10: Change of assets by farmers as a result of project



Source; Field Work, (2016)

The acquisition of the new assets as a result of CSA project was further stated by the farmers in a focus group discussion. From the findings in the FGDs, it transpired that farmers have benefitted from the project in various ways including the buying of new assets for the households. This was manifested in the following account by one of the respondents;

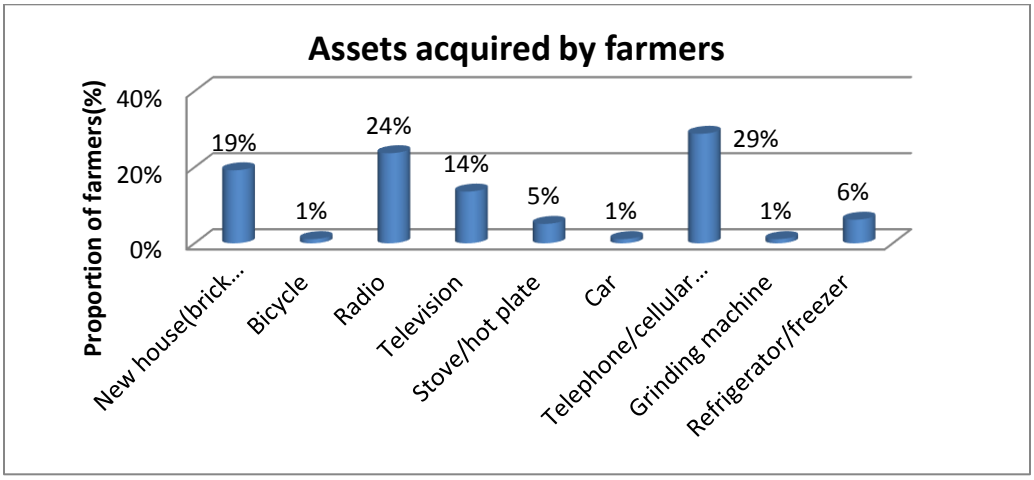
> *"Through the CSA project sales or money received from NAMboard, we are now buying almost everything that we want. I have bought a cell phone, a TV and some school uniforms. I have also been able to meet our children needs and pay school fees*". Women, FGD

Another respondent had the following to say regarding assets bought:

> *"This project has really helped us as a community particularly us the women who are not working but have to provide everything for the families. It has enabled me to buy a stove for cooking, something which I couldn't afford before. We are really thankful to NAMboard and partners for bringing this project to eMpatheni area". Women, FGD*

The study participants were further asked what type of assets they have acquired as result of the project benefits. A majority (29%) of the farmers had bought cell phones with money obtained from project sales whilst almost quarter (24%) bought radios. Only 19% indicated that they managed to build new houses or bought corrugated sheets for old houses which were previously thatched. Furthermore, 14% of the farmers bought a television for the household whereas only 6% revealed that they bought a refrigerator. The rest (1%) reported to have either bought a bicycle, car, or grinding machine. This has been attained in a period of two years. The analysis of the evaluation indicates that the project has had significant contribution in the change of assets by households, Figure 11 below:

Figure 11: Assets bought by farmers as a result of CSA project



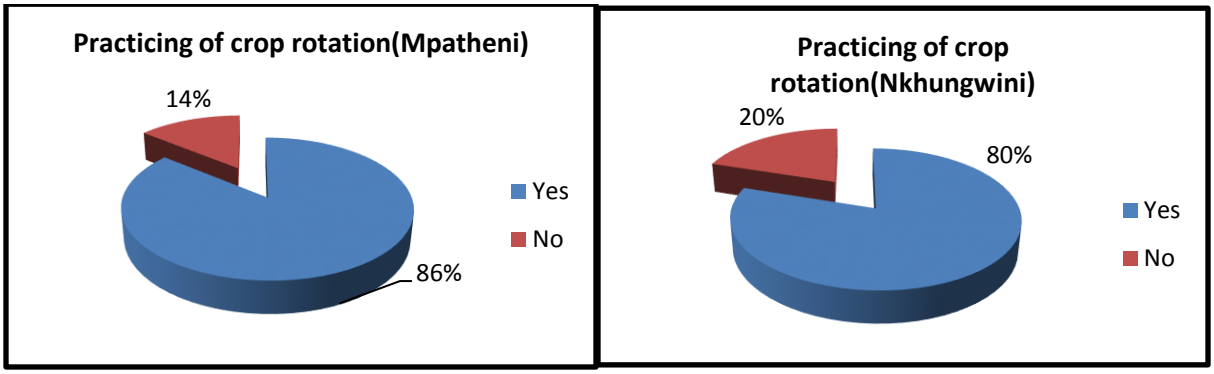
Source; Field Work, (2016)

5.2.2 Proportion of farmers practicing crop rotation

When the food crop is mono-cropped year after year and is poorly fertilized, the nutritive value of the soil diminishes and there is a build-up of pests and pathogens. The improved practice of incorporating a leguminous crop into the rotation should be promoted among poor small-scale farmers. In addition, the leguminous crops promoted as part of the CA rotation, enable the production of a more nutritious diet as well as improving soil fertility and quality. This enables a family to improve the productivity of their land at no extra cost hence there is no doubt that CA crop rotation technologies are of real significance to even households affected by HIV/AIDS, (COMESA-EAC-SADC-CC Programme, 2011) by providing for production of more essential nutrient crops.

In the context of the project under review, the study participants were asked if they practiced any crop rotation in their farming under CSA. Eighty six percent (86%) of the farmers in Mpatheni indicated that they do practise crop rotation under the CSA project whilst eighty percent (80%) at eNkhungwini revealed that they practise crop rotation. The practising of crop rotation by the farmers is an indication that they are aware of the benefits that are accrued from such a practice (see Figure 12).

Figure 12: Farmers practising crop rotation in the study areas



Source; Field Work, (2016)

The practicing of crop rotation as a result of CSA project was further pointed out by the farmers in a focus group discussion. From the findings in the FGDs it emerged that farmer's practice crop rotation mainly due to the purpose of improving the soil fertility and yields per hectare. This was evident in the following statement by one of the participants;

"I practice crop rotation because it is good for soil management and improves the amount of yields. CSA project has taught us to use this method for the good of our farming practices and to improve soil fertility". Women FGD

Another participant in the FGD also shared the same sentiments about crop rotation by citing the following;

"CSA project has really been beneficial to my farming techniques in that I didn't know anything about crop rotation and its benefits. But now I practice it in my fields particularly in maize production trying to increase the output of maize" women FGD

Table 9. Evaluation on farmers practicing CSA

Area	Indicator Summary	Baseline	Variance	Evaluation
Mpatheni	Proportion of farmers practising Crop rotation under the CSA project	44%	42%	86%
Nkhungwini	Proportion of farmers practising Crop rotation under the CSA project	14%	59%	73%

The evaluation observed an increase by 42% in the proportion of farmers practicing crop rotation in Mpatheni while there was also an increase by 59% in proportion of farmers using crop rotation in farming at Nkhungwini as shown in Table 9. The project encouraged farmers to practice crop rotation as a means of increasing fertility of soil and increasing productivity so as to help them improve the household food security. NAMBoard trained farmers on crop rotation and its benefits and hence training translated into action for most of the farmers under the CSA project. The evaluation team suggests that the CSA project should further be rigorous in promoting crop rotation among the farmers. It was however noted that not all farmers are practicing the (crop rotation) technique.

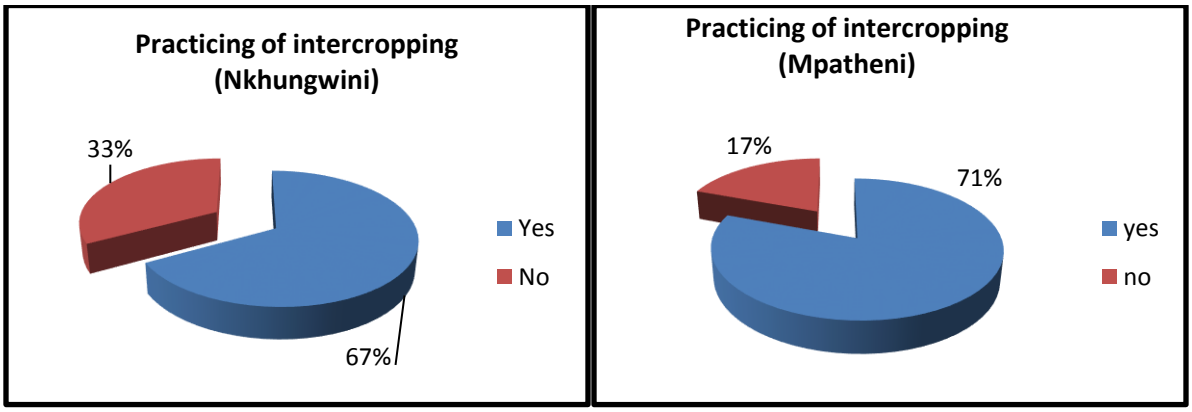
5.2.3 Proportion of farmers who Practise intercropping

Intercropping offers the farmers the opportunity to engage nature's principles of diversity in their farms. It further has the benefits for pest management due to increased diversity, while increasing the productivity per unit of land (Sullivan, p, 2004). A significant number of the farmers practice intercropping due to lack of adequate land while some are either practicing it to save money or as a

land management strategy. Enlightened farmers practice intercropping as an adaptation strategy to impacts of climate change especially drought. This is achieved through derived benefits from drought resistance capacities of different crop (CSA Baseline Study, 2014).

The study participants were asked if they practise any intercropping in their farming practices as a result of CSA project. Seventy-one percent (71%) of the farmers in Mpatheni indicated that they do practise crop rotation under the CSA project whilst 67% at Nkhungwini revealed that they practise crop rotation as part of their farming techniques. The techniques were taught by NAMboard to farmers and its importance in the farming (see Figure 13).

Figure 13: Farmers Practising Intercropping



Source; Field Work, (2016)

The practising of intercropping as a result of CSA project was further revealed by the farmers in a focus group discussion. From the findings in the FGDs, farmers were in agreement that intercropping is vital for maximization on land usage. This was clear in the following statement by one of them;

"The project, CSA, has really enabled us to think and taught us more about farming, including the practicing of intercropping. We were trained that, if land is scarce, as farmers we must intercrop. For instance, in my plot I intercrop maize and beans or cabbages and spinach in my garden" Men, FGD.

Table 10: Evaluation on practicing of intercropping

Area	Indicator Summary	Baseline	Variance	Evaluation
Mpatheni	Proportion of farmers practising intercropping under the CSA project	49%	22%	71%
Nkhungwini	Proportion of farmers practising intercropping under the CSA project	14%	53%	67%

The evaluation team observed an increase by more than half (53%) in the proportion of farmers practising intercropping in Nkhungwini while there was also an increase by almost a quarter (22%) in proportion of farmers using intercropping in farming at Mpatheni (Table 10). The CSA project has had a significant impact on farmers' choice for intercropping.

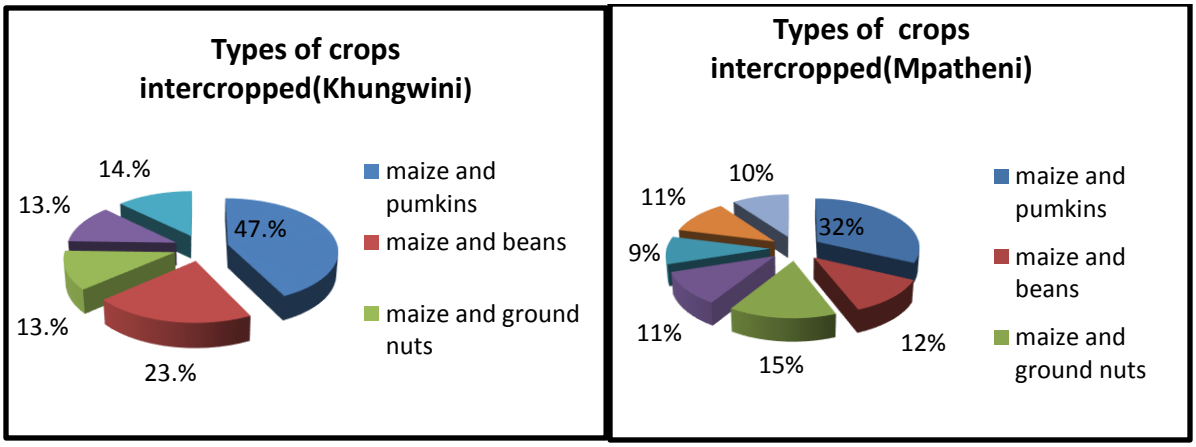
5.2.4 Types of crops intercropped by farmers under CSA

Following the observation that farmers practice intercropping, they were further quizzed on the type of crops that they intercrop. The findings in Figure 14 show that maize is the major crop that is intercropped with others such as pumpkins, beans, ground nuts, sorghum, and butternut due to the fact that it is the stable food for every household. The evaluation further found that the variety of crops intercropped has also been applied in the growing of vegetables such as beetroot, lettuce and cabbages. Furthermore, the evaluation observed an increase from only 3 combinations to 7 combinations of crops intercropped as compared to the baseline database. Farmers at Mpatheni were found to have more varieties of crops put under intercropping as compared to farmers in Nkhungwini. This significant increase in intercropping was an indication that farmers have more awareness and understanding of the importance of intercropping in their farming activities as it increases output and maximize use of land. (See plate 4 and 5)

Plate 4. Intercropping cabbages and lettuce

Plate 5. Intercropping cabbages and green pepper

Figure 14: Types of crops intercropped by farmers under CSA project

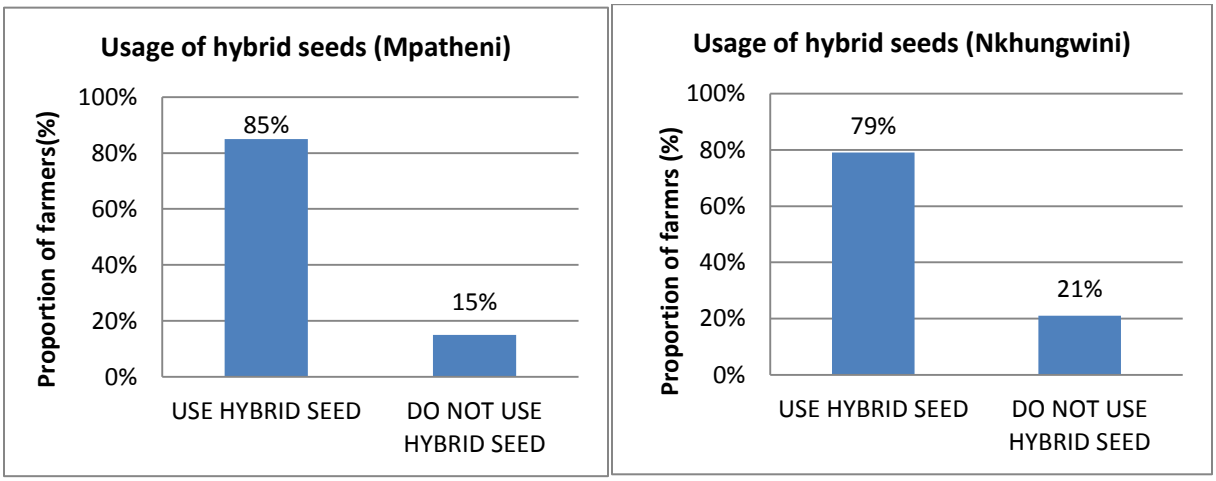


Source; Field Work, (2016)

5.2.5 Proportion of farmers using Hybrid Seeds under CSA project

Hybrid seeds usage is chosen to improve the characteristics of the resultant plants, such as better yields, greater uniformity and improved colour and better disease/pests resistance (Ayele, 2011).In the perspective of the project under review, the study participants were asked if they use hybrid seeds in their farming practices under CSA. The findings show that 85% of the farmers in Mpatheni use hybrid seeds for farming under the CSA project whilst more than three quarters (79%) revealed that they use hybrid seeds as part of their farming inputs at Nkhungwini, see Figure 15.

Figure 15: Proportion of farmers using hybrid seeds as result of CSA project



Source; Field Work, (2016)

Table 11: Evaluation on usage hybrid seeds

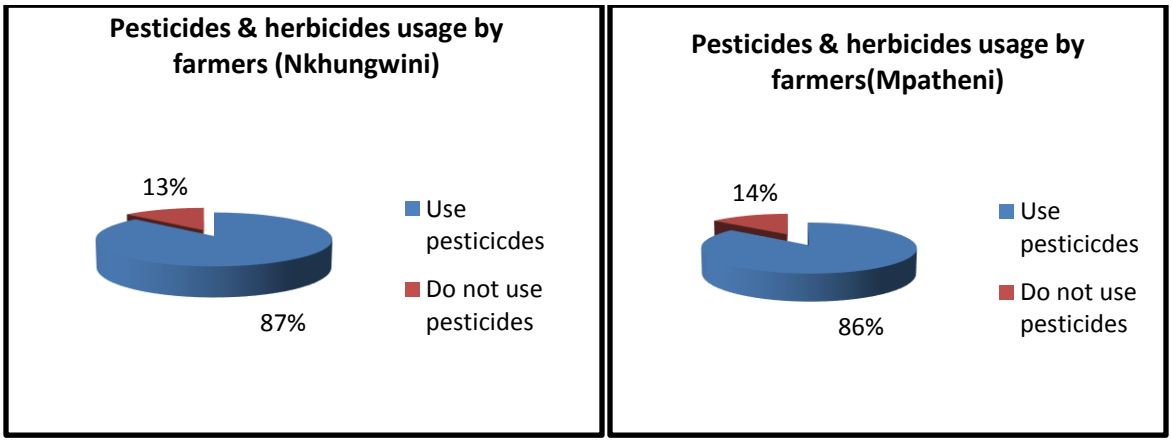
Area	Indicator Summary	Baseline	Variance	Evaluation
Mpatheni	Proportion of farmers using hybrid seeds under the CSA project	69%	16%	85%
Nkhungwini	Proportion of farmers using hybrid seeds under the CSA project	71%	9%	79%

The evaluation team observed an increase by 9% in the proportion of farmers using hybrid seeds under the CSA project in Nkhungwini while there was also an increase by 16% in proportion of farmers using hybrid seeds under the CSA project in farming at Mpatheni as shown in table 11. This finding indicated that farmers do see the value of using hybrid seeds that are resistant to drought and are early maturing as part of adaptation strategies and have been trained on advantages of using hybrid seeds. The evaluation team noticed that the variance in Nkhungwini was much lower than Emphatheni, however, no further analysis could be done establish the significance of the figure due to unavailability of baseline data.

5.2.6 Proportion of farmers using pesticides/herbicides as a result of CSA project

The findings in the present evaluation indicate that participants use pesticides in their farming practices under CSA. The findings (figure 16) further show that 87% of the farmers at Nkhungwini apply pesticides to their crops whilst an almost equal proportion (86%) of farmers at Mpatheni also uses pesticides in farming. The usage of pesticides and herbicides by the farmers in the study areas to control pests and weeds indicates an understanding of importance of such chemicals in the farming.

Figure 16: Proportion of farmers using pesticides/ herbicides under the CSA project



Source; Field Work, (2016)

Table 12**:** Evaluation of farmers using pesticides and herbicides

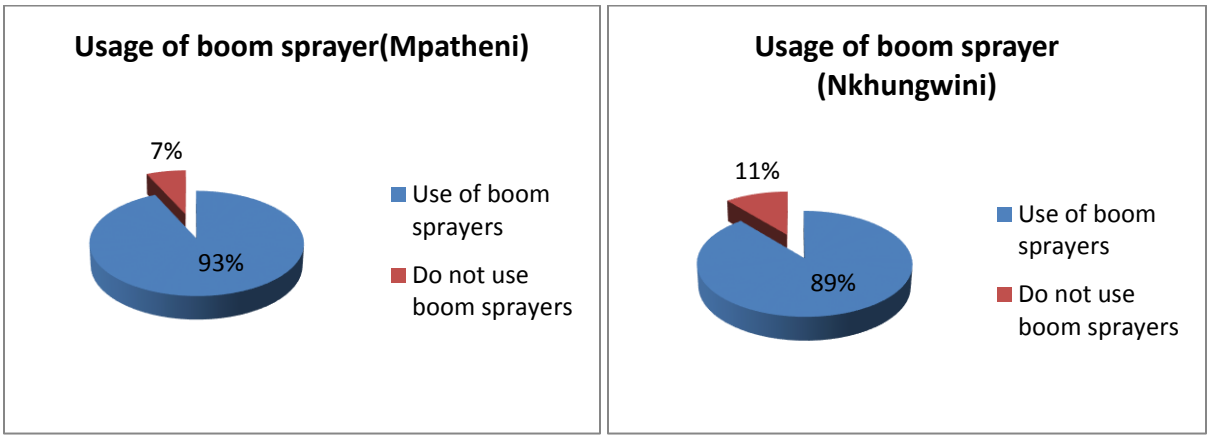
Area	Indicator Summary	Baseline	Variance	Evaluation
Mpatheni	Proportion of farmers using pesticides and herbicide under the CSA project	86%	0%	86%
Nkhungwini	Proportion of farmers using pesticides/ herbicides under the CSA project	87.5%	0.5%	87%

The evaluation team observed no change (0%) in the proportion of farmers, from the baseline to the evaluation results, using pesticides and herbicides under the CSA project in Mpatheni while there was also a reduction (0.5%) in proportion of farmers using pesticides and herbicides under the CSA project in farming at Nkhungwini (see table 12). These finding indicate further that farmers do see the importance of using the pesticides and herbicides as part of adaptation strategies for Climate Smart Agriculture. The evaluation team could not ascertain why there was an insignificant change in usage of pesticides and herbicides in the study areas.

5.2.7 Proportion of farmers using the Boom Sprayers

The findings of the evaluation show that participants use the boom sprayer in their farming practices under CSA. The findings further (Figure 16) reveal that that 93% of the farmers at Mpatheni use boom sprayers for their crops whilst 89% of farmers at Nkhungwini also do use boom sprayers in farming. The usage of boom sprayers by the farmers in the study areas to control pests and weeds indicates an understanding of importance of equipment in the farming process.

Figure 17: Usage of boom sprayers by farmers



Source; Field Work, (2016)

Plate 6. Tractor drawn Boom Sprayer being tested at SRDA

Table 13**:** Evaluation on farmers using boom sprayers

Area	Indicator Summary	Baseline	Variance	Evaluation
Mpatheni	Proportion of farmers using boom sprayers under the CSA project	-	-	86%
Nkhungwini	Proportion of farmers using boom sprayers under the CSA project	-	-	87%

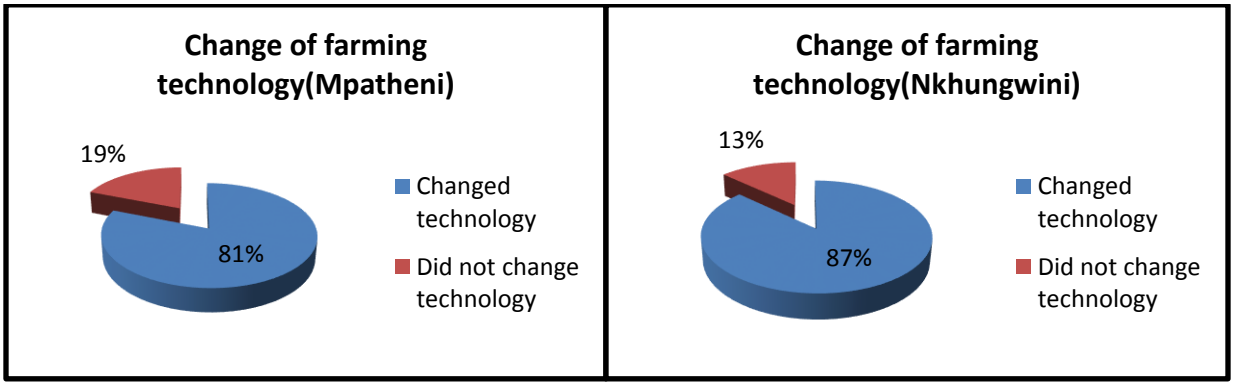
The evaluation observed that 86% of the farmers use the boom sprayers as shown in Table 13. There was no baseline information to compare the evaluation findings, however, NAMBoard procured, trained and supported farmers on the usage of the boom sprayers and its importance in the Climate Smart Agriculture technology. The evaluation team noted that the high proportion using boom sprayers is an indication that farmers do see the importance of using the boom sprayers as part of adaptation strategies for CSA and the fact that it is much quicker to cover more land as compared to the conventional sprayers. The evaluation team ascertained that there are only two (2) boom sprayers servicing five (5) areas namely Mahamba, Zombodze, SRDA, Mahlalini, Dumako, Hluti, and as such some farmers end up not using it because of the high competition. The evaluation suggests that three (3) more boom sprayers be procured to service each area and minimize the waiting period of the farmers in accessing the equipment.

5.2.8 Proportion of farmers who changed farming technology under CSA project

CSA technologies should improve resource use efficiency, higher productivity and increased yields. Furthermore, a new technology can shift the total production curve upward so more output is produced per unit of input. Zhou et al. (2008) pointed out that CSA technology contributes to agricultural production in two ways: increasing crop yields and enabling farmers to increase cropping intensity and switch to high-value crops. Therefore, CSA technological intervention can increase incomes for farmers and their households.

The findings of the evaluation show that participants have changed their farming technology under CSA. The findings (figure 18) further reveal that a majority (81%) of the farmers at Mpatheni changed technology used in farming of crops whilst a large proportion (87%) of farmers at Nkhungwini also changed technology used in farming crops under CSA. The change from traditional methods or technology to CSA farming technology by the farmers is an indication of acceptance and realization of the advantages of using the technology and more particularly because climate change, conventional farming systems are often subjecting farmers to serious crop failures mainly as a result of persistent droughts.

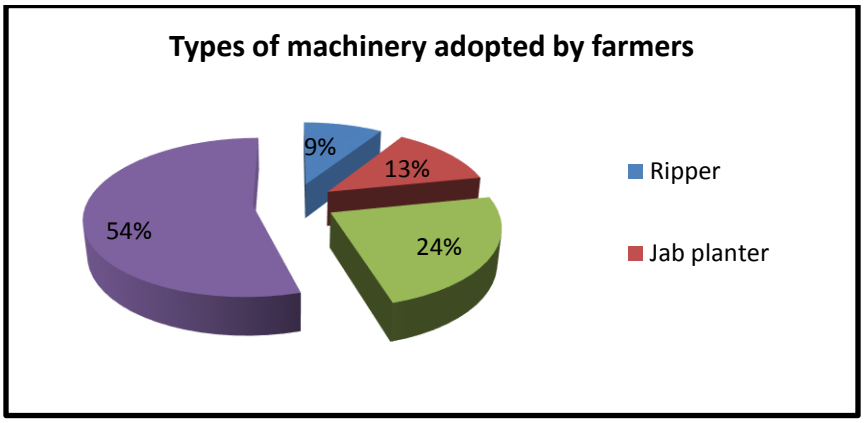
Figure 18: Adoption of CSA technology by the farmers



Source; Field Work, (2016)

The participants further revealed that various farming technology has been adopted by farmers as a result of CSA project. These CSA technologies include, No till planter, Ripper, Jab planter of cultivation, direct seeder, which are provided under then CSA project at SRDA. The Findings in figure 19 show that more than half (54%) of the farmers use the direct seeder/ No Till planter for farming purposes while almost a quarter (24%) use the boom sprayer. Furthermore, only 13% adopted the jab planter while very few (9%) use the ripper equipment.

Figure 19.Types of machinery adopted by farmers under CSA project



Source; Field Work, (2016)

Plate 7. Direct Seeder being tested

Plate 8. Tractor drawn Ripper

Table 14; Evaluation on adoption of CSA technologies

Indicator Summary	**Baseline**	**Variance**	**Evaluation**
Proportion of farmers adopted CSA technologies/ machinery	10%	66%	76%

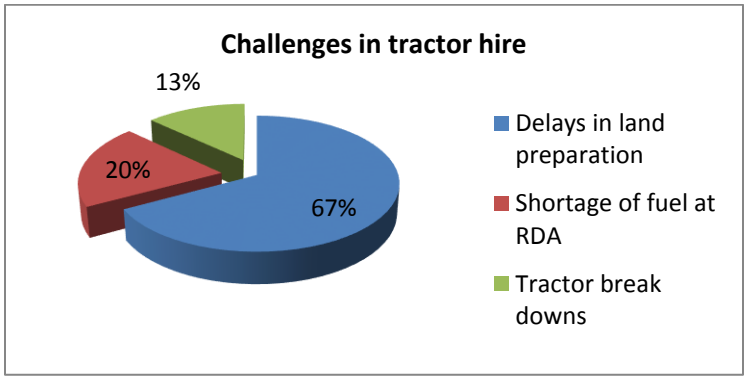
The evaluation team observed a change by 66% in the proportion of farmers, from the baseline to the evaluation results, who adopted CSA machinery use (see Table 14). These findings further indicated that there is clear related activity in the program to support adoption of CSA machinery. The evaluation team observed that the high proportion of farmers using CSA machinery is an

indication that farmers are translating information learnt into action rather than relying on the conventional machinery.

5.2.9 Challenges in the tractor hire and implements

The beneficiaries were asked if they experienced any challenges in tractor hire under the project. A large proportion of the farmers (67%) reported to have had challenges with the tractor and implements because there were delays in the land preparation plans. Others (20%) indicated that sometimes the tractors are grounded due to shortage of fuel at SRDA hence they have to wait until the fuel is delivered resulting in loss of time. The rest (13%) of the farmers revealed the tractors sometimes break down leaving them without a mechanic on site to attend to break downs, see Figure 20. As a result they are forced to hire tractors from private individuals which are much more expensive.

Figure 20: Challenges in the tractor hire



Source fieldwork, 2016

From the findings in the FGDs, farmers lamented about the shortage of fuel at the SRDA and the unavailability of mechanic on site. They decried that the shortages delay land preparation under the CSA project. This was evident in a statement by one of them who had the following to say;

> *"The idea of CSA is good, but having shortages in fuel and resident mechanic for tractors is not good for us as farmers because it delays our planting. If there is shortage of the fuel at SRDA we are forced to hire the expensive tractors. We ask that more mechanics are hired and be stationed here at SRDA. Sometimes we can't do land preparation because the tractors have a break down and it takes a month or so to fix it. The extension officers tell us that there is no mechanic on site, so a lot of time is lost" Man in FGD*

The sentiments were further expressed by one of the key informants who also indicated that the current tractor model is not workable if farmers are to realise the full benefits of CSA. He commented thus;

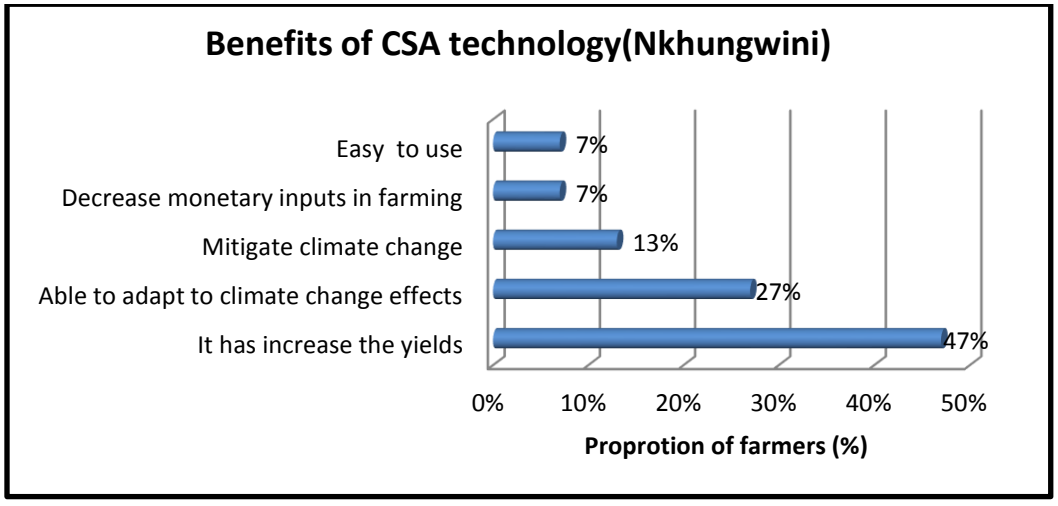
"There is currently a challenge with fuelling of tractors and mechanics available for service of tractors. In the event there is shortage of fuel, all work is stalled so land preparation is put to a halt. This results in farmers having to hire from private individuals who have tractors thus increasing their land preparation costs "Respondent, KII

From these findings, the evaluation team noted that for the full benefits of CSA to be realised by the farmers under CSA, a steady supply of fuel is needed at SRDA. The evaluation found that the current Government fuel procurement system delays the farming process. Therefore, the tractor hire model should have its own operational account that will be managed by the Project Accountant so as to limit time lost by farmers as well as ensuring effectiveness and efficiency in the provision of such services. The account will cater for needs such as replacement of parts and fuelling of the tractors. The evaluation also found that there is need for an onsite mechanic with a service vehicle who will attend to all breakdowns while the tractors are in field.

5.2.10 Benefits of CSA Technology

Farmers (Nkhungwini) were asked if they had experienced any benefits offered by the CSA farming technologies as a result of the project. A large proportion of the farmers 47% of the farmers reported that CSA technology assists in increasing their farm yields, whilst more than a quarter 27% reported that it has helped in the adaptation to climate change, and 13% revealed that technology helps them to mitigate climate change. Very few (7%) indicated that the technology is beneficial in that it easy to use and another 7% revealed that CSA technology has decreased monetary inputs into farming activities. Analyzing the results on the benefits of the technology, the results show that the CSA technology has contributed immensely towards household food security in the study areas. The full distribution of the results is presented in Figure 21 below.

Figure 21.Benefits of CSA technology as observed by farmers (Nkhungwini)



Source; Field Work, (2016)

The use of CSA farming technology as opposed to the conventional methods of farming has had some benefits for the famers under the CSA project. The findings were further supported by participants' in a focus group discussion. From the findings in the FGDs, farmers were in agreement that CSA technology is vital for farming as it brings some benefits. This was evident from one of them who had this to say;

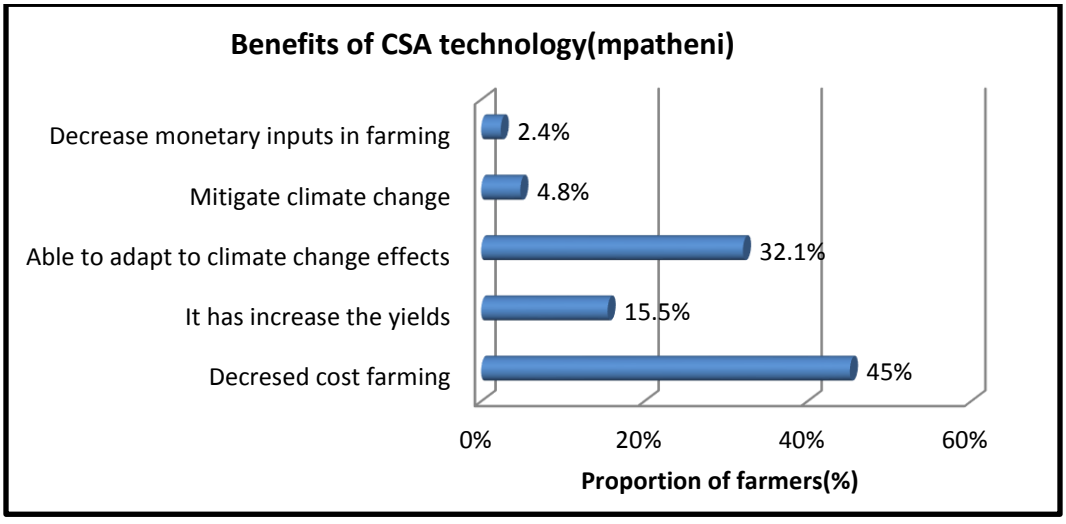
"*We now have enough food to sell and for taking care of our families*" (Men, FGD)

Another participant echoed the same sentiments by revealing the following;

*"It reduces cost of farming because of savings from our fields. In CSA there is no tillage so we save the money previously used for hiring tractors for tillage". (*Men, FGD)

Similarly, farmers at Mpatheni indicated that they have experienced the benefits of the CSA technology at household level. Almost half of the farmers (45%) responded that CSA technology helps in decreasing cost of farming. Furthermore almost a third (32.1%) indicated that the technology has aided in adaptation to climate change whilst very few (15%) reported that technology has had benefits in increasing the yields. Others (4.8%) were of the view that CSA technology has benefitted them through mitigating climate change while only 2.4% have benefitted through decrease in the cost of farming. Analysis of the results on the benefits of the technology, indicate that the farmers view the reduction on the cost of farming as crucial and hence the savings made would help in meeting other household needs. The full distribution of the results is presented in the Figure 22 below.

Figure 22: Benefits of CSA technology as observed by farmers (Mpatheni)



5.2.11 Marketing and Value Chain

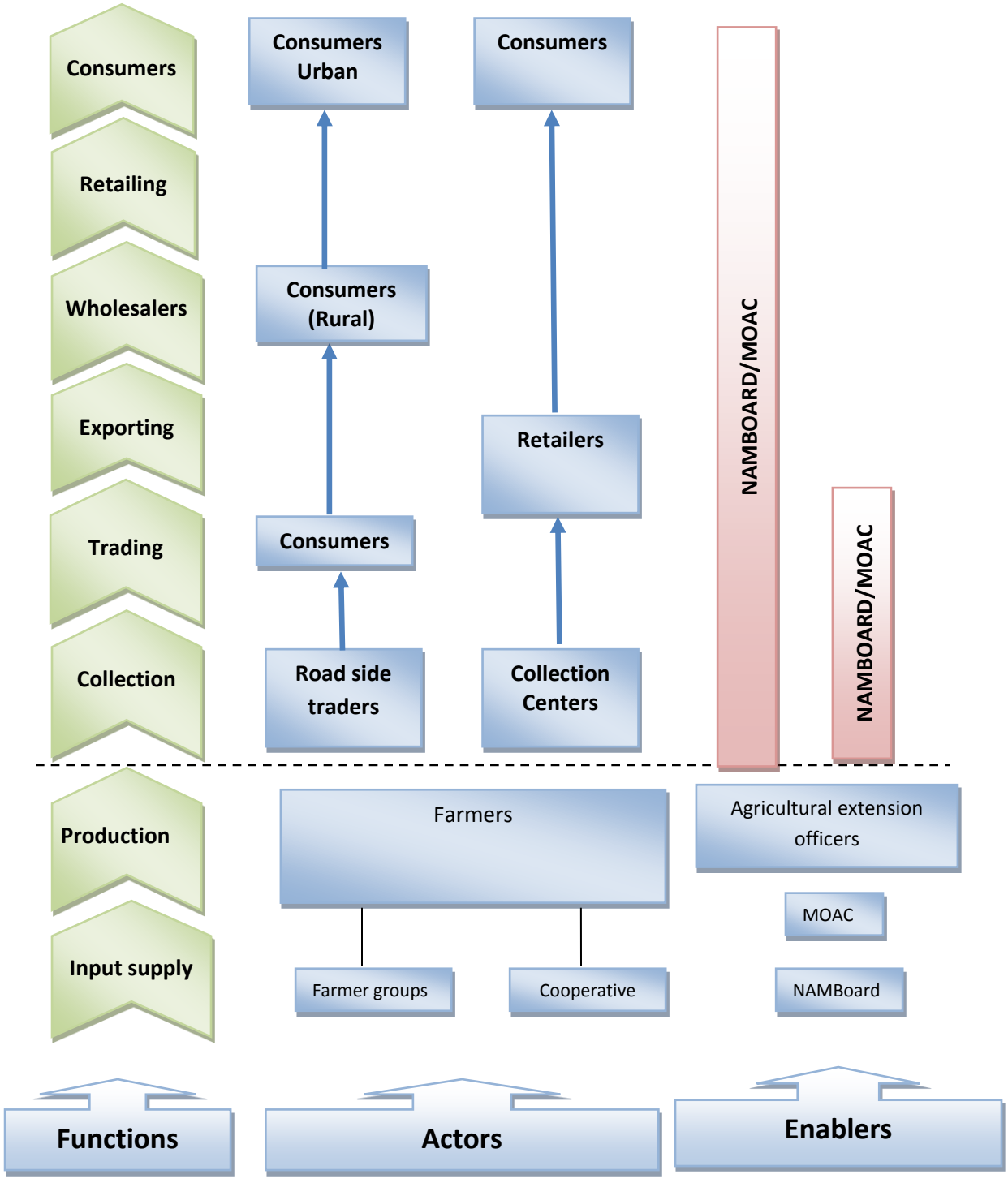
According to McCormick and Schmitz (2002), value chain mapping enables the visualization of the product from conception to end consumer through various actors. It also helps to identify the different actors involved in the vegetable value chain and to understand their roles and linkages. The value chain map is presented of the Figure 23 below. The linkages are shown vertically from bottom to top. The left hand block lists the major function of the chain, which includes production, collection, trading, processing, trading, and retailing. During mapping, actors involved in this sector are listed and mapped according to their respective functions. Then the institutions supporting this sector directly or indirectly are listed as enablers. The value chain map provides a graphic representation of vegetables as it moves from production to consumers, passing through the different stages and processes.

Mpatheni is the major production area of vegetables between the project areas. The vegetables produced in areas reach the market mainly through Mpatheni- Nkhungwini- Ncabeni- Manzini-Mbabane corridor. Most of the vegetables produced by farmers in the study are collected by NAMBoard at collection centres. The rest of the vegetables are collected by roadside traders in the rural areas for their own selling at the local markets.

In the context of the project, several functions were identified and are performed by various actors in the value chain. These functions include; input supply, production, collection trading, wholesaling and consumers of the vegetables. Furthermore, the actors identified in the value chain process included the farmer groups/organization and cooperatives for the farmers who are part of the CSA project. The farmers are the ones who supply/sell to road side traders (rural) at the local level directly, without involvement of NAMBoard or MOA. In this process, the vegetables are sold to consumers at local level whilst some are sold to urban consumers upon visit to the study areas. The findings further show that some of the farmers directly supply rural retailers at the local level who in turn sell directly to consumers in the area and other neighbouring areas. The evaluation also found that within the value chain, there were actors who enable the process of farming to flow smoothly.

These are identified as enablers such as NAMBoard, MOA and Agricultural Extension Officers (AEO). NAMBoard in particular, performs the role of connecting the farmers to the consumers and national markets in the major cities of the country. Meanwhile, the AEO performs the role of advice on technical expertise to farmers along the value chain process. The evaluation could not do further analysis on the flow of the vegetables in the value chain map due to unavailability of data on the actual volumes sold in each pathway of the market. The evaluation would have liked to quantify the proportion of vegetables that flow along each chain to the market. In future such data should be made available so as to quantify the amount or volumes. The evaluation further noted that the produce does not export the vegetables to other regional markets /countries. NAMBoard should consider encouraging the farmers to increase the output so as to meet the domestic and external demand.

Figure 23: Value Chain Map of Vegetables in Mpatheni and Nkhungwini

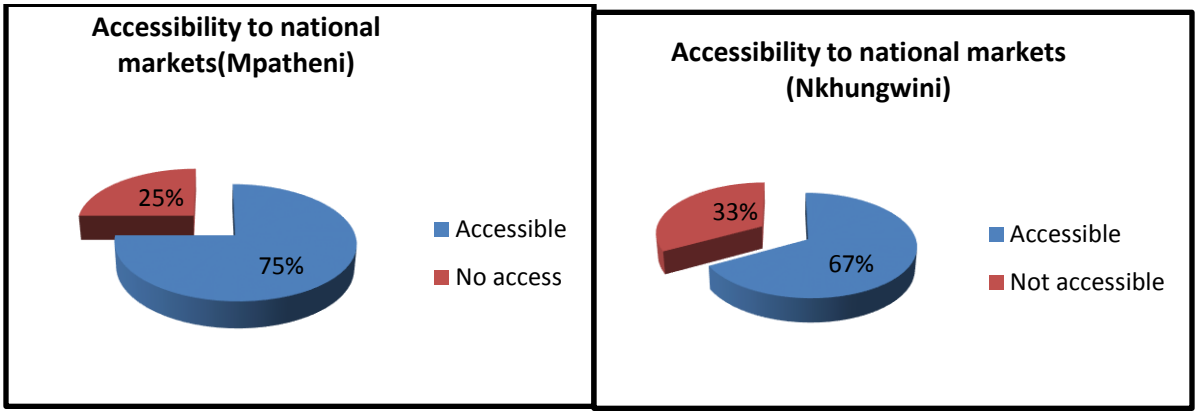


Source; fieldwork, 2016

5.2.11.1Proportion of farmers having access to national markets under CSA project

The respondents were asked if they had any access to national markets as a result of the project. A large proportion (75%) of the farmers at Mpatheni reported to have access to the national markets, whilst more than two-thirds (67%) at Nkhungwini reported to have such access to the markets, see Figure 24. The farmers further revealed that access to markets was achieved through the assistance of NAMBoard through collection of their produce which are sold to national markets such as retail chain stores namely Shoprite and Pick n Pay Supermarkets.

Figure 24: Accessibility to national markets by farmers



Source; Field Work, (2016)

NAMBoard's assistance for access to national markets was also cited by participant in the key informant's interview. The findings were further upheld by a statement by one who said the following:

"*Before the project arrived in the area, we as farmers were struggling with selling our produce. Some of it even got spoilt or rot here at home because of lack in market where to sell our vegetables. But now ever since NAMBOARD and the CSA project arrived in the area, we have access to markets beyond this area or even markets where we never thought we would sell our vegetables. We thank who so ever came up with the idea*" Man, KII.

Table 15: Evaluation on access to national markets

Area	Indicator Summary	Baseline	Variance	Evaluation
Mphatheni	Proportion of farmers having access to national markets under CSA project	0%	76%	76%
Nkhungwini	Proportion of farmers having access to national markets under CSA project	0%	67%	67%

The evaluation team observed a change by 67% in the proportion of farmers, who have access to national markets as a result of the project at Nkhungwini. Similarly, an increase by 76% of the farmers reported to have access to national markets especially after the help from NAMBoard as shown in Table 15. The analysis shows that there has been a significant change in the marketing of vegetables by the farmers. The evaluation team further noted that there was no respondent who cited having access to national markets at the time of the baseline study. The results show that NAMBoard and the CSA project contributed enormously towards marketing of produce in the study areas.

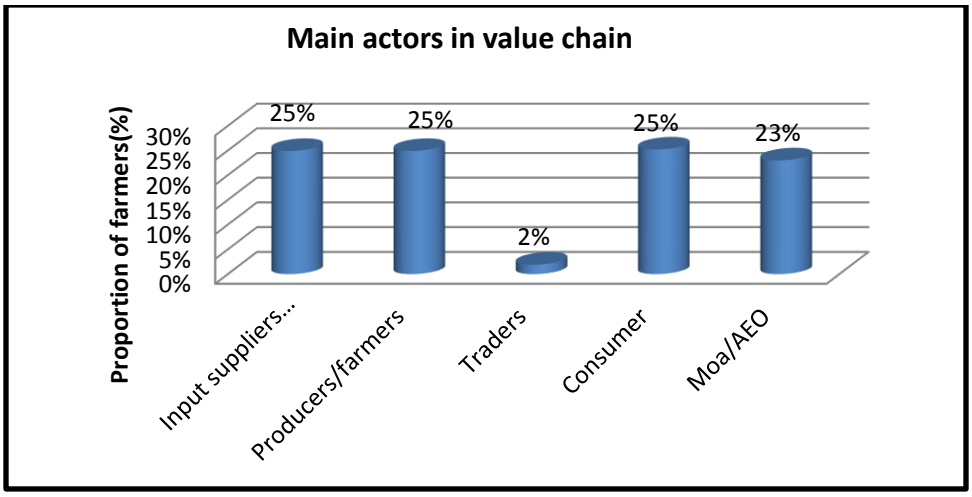
Plate 9. Farmers Selling Vegetables on the Road Side at Mpatheni

5.2.11.2 Main Actors in Value Chain

According to KIT *et al.* (2006), the main actors are those involved in commercial activities in the chain such as input suppliers, producers, traders and consumers, while indirect actors are those that provide financial or non-financial support services, such as credit agencies, business service providers, Government, NGOs, cooperatives, researchers and extension agents.

Farmers were asked as to who are the main actors in the value chain process under the CSA project and 25% of the farmers revealed that NAMBoard, is critical in the value chain. NAMBoard supplies inputs such as fertilizer, LAN, seedlings (tomatoes, green pepper, and cabbages), seeds (beetroot, carrots, butter nuts and pesticides. The farmers (25%) further acknowledged the fact that as producers they are also key because without their input and efforts in farming there would be no produce at all. Another quarter (25%) identified the consumers as an integral part of the value chain process because consumers are the main market for the vegetables produced under CSA Project. Other farmers (23%) indicated that the Ministry of Agriculture and its Extension Officers are key in the value chain process as they provide assistance with regards to knowledge, technical expertise and equipment for production is provided through their assistance. Very few farmers (2%) reported that traders in the community as being part of the main actors in the value chain (See Figure 25).The findings indicate that there are various actors in the value chain who have different roles in the process.

Figure 25: Market value chain actors under the CSA project

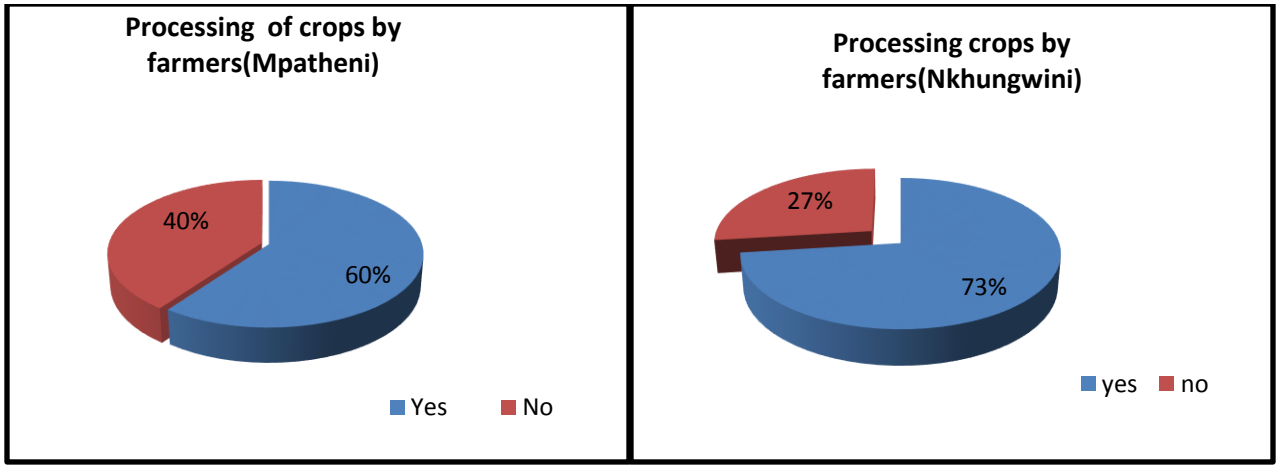


Source; Field Work, (2016)

5.2.11.3: Proportion of farmers processing crops before selling to markets

The respondents were asked if they do any processing of vegetables before sending these to the national markets under the CSA project. A large proportion of the farmers (73%) at (Nkhungwini) reported to process the vegetables, whilst more than half (60%) at (Mpatheni) indicated to processing before sending to the markets, see Figure 26. The farmers further reported that processing of vegetables.

Figure 26: Type of crop processing



Source; Field Work, (2016)

Processing of the vegetables was further revealed by one key informant who indicated the following;

> *"Farmers are encouraged to process their vegetables before sending/collection to the national markets. Usually, farmers are expected to wash their produce particularly carrots, beetroots, lettuce, spinach and tomatoes. The farmers are further provided with packaging material in the form of bags for easy handling and weighing. In the long run, there will be harvesting equipment, particularly crates that will be used by the farmers as well. In fact the process of purchasing the crates is under way"* Man, KII

Table 16: Evaluation on processing of crops

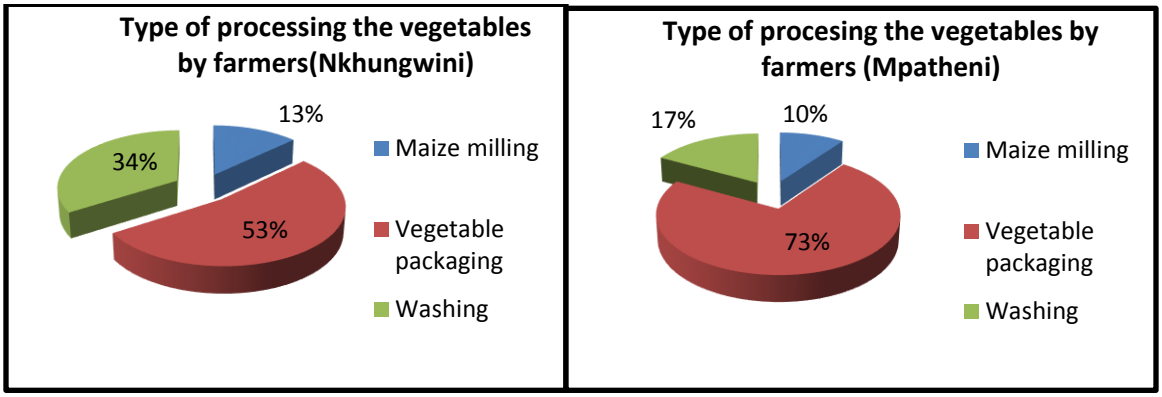
Area	**Indicator summary**	**Baseline**	**Variance**	**Evaluation**
Mphatheni	Proportion of farmers processing crops/vegetables under CSA project	26%	34%	60%
Nkhungwini	Proportion of farmers processing crops/vegetables under CSA project	17%	56%	73%

The evaluation team noticed a change by more than half (56%) in the proportion of farmers (Nkhungwini) who process crops before sending to the markets as a result of the project. Likewise an increase by more than one-third (34%) of the farmers (Mpatheni) who reported to have processed their crops before sending to the national markets. The analysis shows that there has been a considerable change in processing of vegetables by the farmers as result of the intervention of the project as compared to the baseline data base, see Table 16.

5.2.11.4 Type of processing done by Farmers

The study further examined the type of processing which farmers undertake before sending the vegetables to the markets. It was reported (Figure 27) by farmers at Nkhungwini that most (53%) do packaging of the vegetables and more than a third (34%) revealed that they do washing of the vegetables. Very few (13%) indicated that they do some maize milling before selling to consumers. On the other hand, farmers at (Mpatheni) revealed that a majority (73%) package vegetables whilst only 17% revealed that they do wash the vegetables before sending to the markets. Very few (10%) process maize by milling it before sending to the markets as shown in figure 26. The evaluation team noted that the types of processing of vegetables have not significantly changed from the findings of the baseline study.

Figure 27: Type of processing



Source; Field Work, (2016)

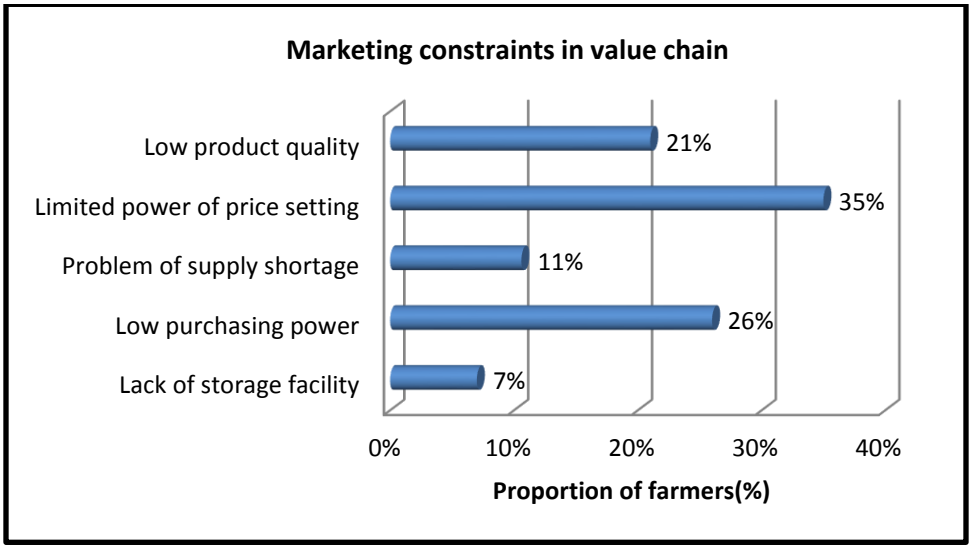
5.2.11.5: Challenges in the Marketing Value Chain

All the farmers engaged in the CSA project confirmed that there are marketing problems in vegetable value chain. The major vegetable marketing constraints mentioned by farmers are related to the limited power of price setting, the problem of supply shortage, lack of storage facility, problem in information flow and low product quality. Farmers also mention that the main cause of these problems is high monopolistic power of wholesalers and big retailers' who are the main markets for vegetables. The findings in Figure 28 indicate that more than a one-third (35%) of the farmers indicated that the major challenge facing them is having limited power in the price setting at the markets.

Furthermore, more than a quarter (26%) decried that the low purchasing power on their part also contributes to the challenges in marketing. If they had the personal funds they would have not relied on the credit from NAMBoard but they would use their own resources for cultivation purposes. Some (21%) of the famers lamented that sometimes the produce does not meet the required quality by NAMBoard hence their produce or part of it, sometimes is rendered sub-standard to be sold at the national markets. Farmers also indicate that another constraint was shortage in supply as the demand is ever increasing.

Very few (7%) revealed that a facility is needed to store their produce which gets rotten once harvested (later established after interviews were conducted). During the project cycle, NAMBaord has implored farmers to diversify their produce so as to meet the demand from the markets and farmers were encouraged to incorporate business principles in their farming activities such as keeping of records. NAMBoard has further encouraged farmers to try to grow crops to meet required standards in the markets.

Figure 28: **Marketing Challenges**



Source; Field Work, (2016)

The evaluation findings were further echoed by participants in the focus group discussions who lamented vehemently about the issue of price setting in the markets. The participants were of the view that not having a voice in the setting of prices is not working towards their favour and therefore would like to sit in the board meetings (at least have a representative) which set the prices of vegetables. The sentiment was evident in one of them who had this to say;

"As farmers we are not allowed to set the price of our vegetables, but we are only expected to take what is offered whether it is enough or not we do not know. If only we had a say in the setting of the prices things would be much better for us". Man in FGD

Another lamented that farmers are to blame on the aspect of supply shortage limiting the crop and vegetable diversification. He commented that;

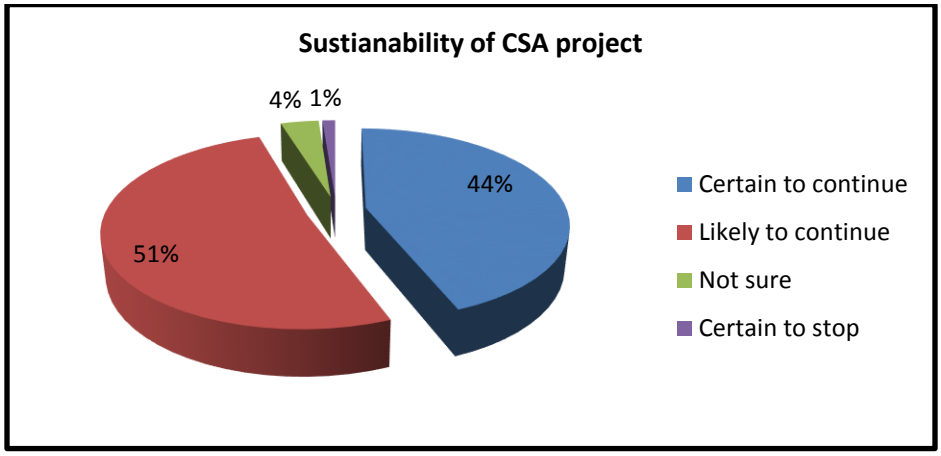
"NAMBoard advises us to grow different crops to get market and so that we have constant supply of vegetables. Once they see that I have grown beautiful cabbages, they all want to grow it as well. This is not good for the market supply. What if the market wants carrots or butternuts, yet we have all grown cabbages? Then we all lose. It vital that we must diversify our produce" Man in FGD

5.3. Sustainability

The farmers had mixed feelings about the sustainability of the project beyond the NAMBoard/ COMESA/UNDP funding. The Findings (Figure 29) from the evaluation show that more than half (51%) of the farmers were of the view that the project is likely to continue. Almost half (44%) indicated that they were certain that the project will continue. Very few farmers (1%) were certain that it will stop whilst only 4% were not sure. The farmers and other community members have acquired the skills needed to sustain the CSA project even though not decided on the issue. The evaluation observed that there is need for close monitoring to ensure sustainability as well as

establishment of a fund for operation and maintenance purposes. The evaluation observed that farmers do not keep accounting records of their production thus making the process vulnerable to non-profit making.

Figure 29: Sustainability of project as viewed by farmers



Source; Field Work, (2016)

The certainty of the project sustainability was further evident in a statement by one participant who said;

> "*The project will most likely continue even after funding has ended. The CSA project is here to stay in the community because they have given us all the information on how to run it, the project will continue because we have been equipped with skills and knowledge"*. (Women in FGD).

Another participant expressed concern about the project sustainability. She had the following to say;

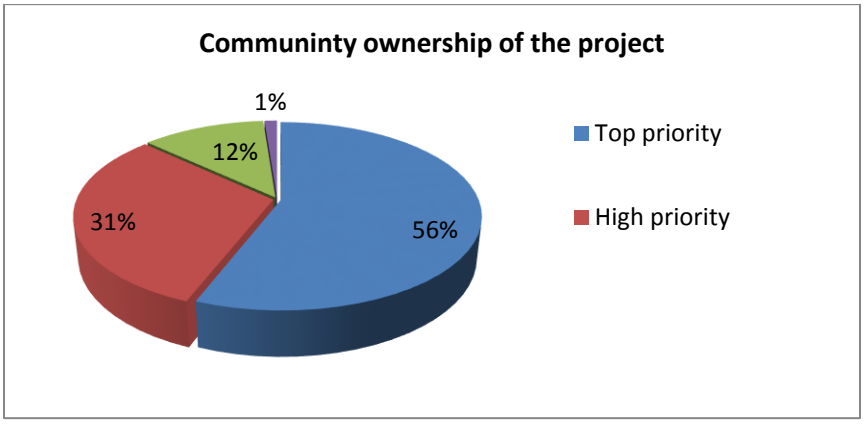
> *"As long as we still rely on NAMBoard to fund our farming activities on credit and also the gardens still not fenced, the project is not sustainable for me" (*Women in FGD)

During the Evaluation period most of the farmers were found working on the project particularly at Mpatheni where the drip irrigation system was being installed. Sustainability could still be achieved, but certainly not within the time frame left for the COMESAprogramme. It will require an extension if the substantial delays incurred are to be rectified, and a streamlining of the management structure to enhance the programme's efficiency.

Key to increasing the chances of sustainable outcomes is the greater engagement with a greater involvement of the community leadership particularly because of internal chieftaincy differences. It will be important to consider how these initiatives can be sustained, through partnerships with other NGOs like World Vision, Swaziland Environment Authority (SEA) with environmental grants, EU on the SADP project and strengthening the capacity of the farmers to access local funding and in mobilizing resources.

The farmers under the CSA project further indicated that the project has been viewed by them as belonging to the community. This was so because most of them are realizing the importance and the benefits that are brought by the project in their households. The respondents were asked as to how they view ownership of the project. The findings in Figure 30 indicate that a large proportion (87%) considers the project as being either a high priority or top priority to the farmers under CSA. This is an indication that the farmers do see the importance of the project and have learnt that it can uplift their standard of living at HH level.

Figure 30: Ownership of CSA project by farmers



Source; Field Work, (2016)

Sustainability involves planning and managing the 'what, by whom and how' of project processes. In any organization or intervention there is an exit strategy. The strategy should specify how the organization or funder will exit or leave the project once the objectives have been met. However, for the project, the evaluation team could not ascertain existence of such a strategy due to unavailability of data. The project document somewhat alludes to the planned reforms and the expected capacity-building outputs as the major platform for sustainability. Furthermore, Government and NAMBoard have committed financial resources and have taken full involvement in the project from implementation through to the end.

5.3.1 Institutional Capacity

From the evaluation results, it can be noted that much ground was covered by NAMBoard with regards to capacity building both at community level and within institutions. Farmers in the projects areas have been trained on the CSA and its benefits. They have also had hands-on experience in installation of the drip irrigation system and its components at Mphatheni. NAMBoard had also capacitated project staff members of the various components of the CSA project and technologies. Likewise, Government/NAMBoard has trained 50 Extension staff in CSA technologies. The Extension Staff has been capacitated to the level of being ToT who in turn will train other farmers on CSA.

5.3.2 Mainstreaming Gender

One of the main strengths of the project was the support extended to local farmers and community through demonstrating improved, participatory project management and involvement in implementation of some project components, improving household incomes, knowledge transfer/training and creating temporary casual employment for some community members as garden labourers. Although the project did not have gender specific objective, there were conscientious efforts to promote gender inclusion. For example, the farmers were of the view that most project members are the women. This was so because most of the men in the areas had either passed on or working in South Africa. The farmer groups in both study areas were led by one (1) female and one (1) male.

5.3.3 Catalytic role

The project under review was found to have had some significant replication effects within the study areas. There has been replication proper (lessons and experiences are replicated in different geographic area) or scaling up (lessons and experiences are replicated within the same geographic area but funded by other sources). Some farmers within the project area who are not part of the CSA project have also adopted the techniques in their small home gardens as a result of the CSA project successes. Others who are under CA project funded by World Vision have adopted some techniques from this CSA project upon realizing its benefits as depicted or shared by farmers under the CSA project.

Furthermore, through the exchange visits to other demonstration sites outside the CSA project areas, farmers have shared information and skills on how to conduct CSA practices. Sixty-five (65) farmers were sent on an exchange visit to the Republic of South Africa,Ngonini, Mavulandlela and Sdemane to learn about fruit tree production, global gap practices and packages to better understand value chain practices and concepts. Three hundred and sixty-five (365) farmers attended demonstrations on CSA. The farmers were taken on exchange visits for better appreciation and to see best practices. This has been a powerful method of information dissemination between and among farmers both at local and regional levels. In the process farmers have forged alliances with other farmers from outside their own areas.

5.4 Efficiency

5.4.1. Project Design/Formulation: Analysis of logical results framework

The projects design was thorough, inclusive and highly relevant, reflecting the national priorities on CSA as well as adaptation and mitigation measures in the farming sector (agriculture) among rural poor communities in the Mpatheni and Nkhungwini areas. From the project documents, the design team had detailed working knowledge of the issues facing climate change in the project areas and the project was designed along the principles of participation.

The project indicators were specific, measurable, attainable, time bound and relevant (SMART). As shown in the list below the indicators were mainly at output level however with collective attribution contributing to outcome results:

Provision of project supplies:
1.1 To convert 32ha of irrigated land to drip irrigation
1.2 To assist farmers to access Revolving fund for farm Inputs (Loan) and functional
1.3 To provide and Supply farmers with harvesting material
1.4. To purchase and supply Mechanical Planters for CSA and distribute to RDA
2.2. To purchase and supply Boom sprayers purchased and distributed to RDAs

Capacity Development:
2.3 To train Extension Officers provided on CA and other CSA technologies
2.4. To train CA '***Champion Farmers'*** and other farmers on CSA and CA practices/technologies
2.5 To establish four (4) CA demonstration plots in the project areas
2.6. To Conduct Exchange Visits for Nhletjeni and Nkhungwini farmers

The indicator targets were set to be achieved by the end of the project with step wise yearly target to aid in the implementation process. Some outcome indicators, particularly outcomes 2.5 on establishing four (4) demonstration plots lagged behind in schedule due to land allocation challenges in the project area. The risk of the delays in securing land by the projects was largely dependent on Chief's approval which may take longer time than initially planned by the project team. The plan for this indicator was to have four (4) demonstration plots as opposed to one (1) which was established under the project.

Demonstration plots are critical in the success and training of farmers on CSA, therefore, the local authority should have been engaged earlier at the beginning of the project with the view of securing the land for demonstration plots.

Similarly, the conversion of 32ha to drip irrigation was delayed thus resulting in the partial achievement and delivery of equipment. Delays have been attributed to purchasing challenges as the (Project Steering Committee (PSC) had to review the budget figures, rainy season and unavailability of equipment to be utilized, especially the heavy equipment. As a result, the installation process took a long time (project is behind schedule by about 4 months). This was due to price quotes that were more than twice the budgeted amount. It was observed that the drip irrigation equipment has been purchased and has been installed and ready for use by farmers in Mpatheni area.

5.4.2 Stakeholder Participation

The stakeholder involvement outlined participation by various local and national stakeholders in the project. The main participants were the local farmers from the target communities (Mpatheni, Khungwini) Government of Swaziland through (MOA-NAMBoard), COMESA, UNDP. Participating with national level stakeholders was mostly realized through the project steering committee meetings which were held periodically during project design and implementation phases. Being a project funded under the COMESA Climate Change Initiative, participation was skewed heavily towards agriculture entities. The required enabling environment for achieving effective communal, participatory implementation of CSA project was effective. Considering the inherent

land rights/ownership of land in the country, an option was the consideration of a multi-sectoral implementation modality for such project, for example, acquisition for demonstration plots could have been assigned to Chief's Local Inner Council.

5.4.3 Adaptive Management

There were a number of exogenous factors which impacted the implementation of the project, including**;**

- Delays due to over budget quotations for drip irrigation equipment. This was resolved and tenders within the budget were negotiated. Initial plan was to have four (4) tractor implements but later changed to 1 to service all areas.

- Delays in establishing demonstration plots. Initially four (4) plots were planned by the project team (2 central and 2 in farmers' fields) but only one has been established at Nkhungwini.Re-allocation of plots to CSA but not to the original plots due to smaller sizes.

- The costs of the available implement types were higher than budgeted and the boom sprayers were exchanged for planters. Procurement of eight (8) mechanical CA equipment had to be adjusted to suit the budget. However, based on the budget only 4 units were purchased (2 Rippers and 2 Boom-sprayers).

Following the adjustments made to the initial logical frame (output quantities) of the project, the project did good work in adaptive management in response to some of the issues listed above e.g. the initial plan was to procure tractor drawn ripper (4) and Procure Boom Sprayers (4) but due to the high costs of the available implement types higher than budgeted, the boom sprayers were exchanged for planters and only four (4) units were purchased. Furthermore, the project had planned to purchase a refrigerated truck but instead NAMBoard offered a truck to be used for the same purpose, so the component was not purchased. Moreover, in the spirit of co-management and participatory management, farmers' representatives were invited to participate in some project meetings. Based on the interviews with community and project staff, the partnership was successful in bringing the partners together on a variety of issues of CSA.

Other certain external circumstances that were beyond the control of the project were the price fixing of implements and acquisition of land for demonstration plots. This proved to be a challenge for the project team, as it delayed the implementation of the project. Despite the delays in drip irrigation infrastructure procurement, the MOA offered technical assistance and the farmers were capacitated in the installation of the system as they learnt by doing.

6.0 PARTNERSHIP

The project was implemented by NAMBoard on behalf of the Government of Swaziland, and the three (3) communities. To ensure that the project was implemented within the specified parameters and generates value for the communities, NAMBoard engaged various stakeholders, including: traditional leaders, who assisted in the mobilization of farmers, allocation of additional land for the expansion of the holding facility and ensuring there was order in the project area; local farmer

leaders, who improved the uptake of technology and mobilization of farmers and groups; the local experts from the MOA, who provided training, participated in ToT, training; NGOs, who were trained and also provided part of the training to farmers, and the private sector that provided learning opportunities where farmers were taken on exposure trips for CSA technology experience, drip irrigation utilization and value chain linkages. Key partnerships were facilitated with the traditional leaders – Chief Fipha for Nhlentsheni and the Headmen to encourage the uptake of the CS techniques by the farmers, in particular with regards to the enrolment in the Revolving Fund scheme established by the Ministry of Agriculture (MOA) and the NAMBoard through the COMESA funding

UNDP provided oversight and monitoring and evaluation, guidance on operations, updates and financial support with funds disbursement, reporting and liaising with COMESA on behalf of the Government. With the support of UNDP, the project was able to achieve the objectives set out at the start.

The rehabilitation of the project structures was facilitated through Government/NAMBoard funding. The GOS provided a total amounting to E1, 000, 000.00 for rehabilitation of the pack house, technical services, rehabilitation of the project manager's house and additionally provided machinery for work in the project. NAMBoard provided an additional E500, 000.00 for topping up of the revolving fund, in-field clearing and sourcing expertise for the completion of the irrigation component.

Technoserve (an international NGO) and the Swaziland Enterprise Development Company (SEDCO) came on board to assist with the training in business farming knowledge and skills for production and value chain management. Morestill, the involvement of world vision international and Hand In Hand in strengthening CSA and CA training beyond the project cycle as they are situated at the project sites.

The University of Swaziland provided climate smart information and training sessions, mainly targeted at the training of trainers. NAMBoard and the University will continue to work on the agro forestry and climate modelling components, which will have a significant bearing on the up scaling and replication of the initiative.

7.0 PROJECT FINANCING

The funds provided by COMESA, were received by UNDP in Swaziland country office and disbursed to NAMBoard who in turn facilitates all the activities that required funding and provided full financial reports. The total budget for the project was E5 663 250.00 ($630 250) to be disbursed over a period of 18 months by the MOA on behalf of the Government requested for $350, 472 (55.6%), with the remainder set to be sourced from within Government and NAMBoard resources.

Co-financing contributions amounting to E 1,000,000.00 from Government whilst funds disbursed through UNDP amounted to E3, 826,875.51. A large percentage (74%) of the expenditure was incurred by COMESA whilst Government only incurred 26%.

As part of partnership arrangements, there was change in the project plan in that NAMBoard committed one refrigerated truck to the project hence the item was not procured. Likewise, Government/MOA committed a tractor to be used under the CSA project. Such arrangement indicates efficient collaboration between Private Sector and Government. Furthermore, NAMBoard paid a sum of E100, 000.00 on behalf of Government while funding was being processed for the cold room rehabilitation.

As part of financial control and monitoring, NAMBoard had to submit financial reports to UNDP as per agreed time frames i.e. quarterly reports. A fulltime Project Accountant was hired adding good continuity to financial control. The financial records were prepared as per the plan and were found to be within acceptable accounting standards. The evaluation further noted that disbursements between the partners were done on the same date particularly for the first and second disbursements. This was found to be well managed practice to enable implementation of the project activities. The team could not conduct a year by year expenditure as the quarterly reports were only showing the summaries of the financials rather than yearly expenditures. The CSA project team conducted two independent financial audits for the project. One was done by the Auditor General in 2015 and the other by KPMG in 2016.

8.0 PROJECT VISIBILITY and M&E

The M&E plan was reasonably extensive, outlining the type and frequency of progress reporting and including independent financial auditing and evaluation. The periodic monitoring and evaluation plan was put in the hands of the technical team, however on a continuous basis, NAMBoard and Government Extension Officers were to ensure that farmers get all the support that they need to manage the project. NAMBoard was tasked with providing monthly reports to the members of the technical team and also provide feedback to farmers on their performance, both in production and marketing. The evaluator found that NAMBOard adhered to best practice principles for project evaluation by outsourcing end of project evaluation of the project deliverables. The project evaluation conducted at the end of the project was done by an independent evaluator recommended by COMESA/UNDP.

The Project Monitoring and Reporting further specified reporting procedures. Indeed NAMBoard and task team compiled quarterly reports and annual reports in accordance to UNDP reporting procedures. The reports were provided to COMESA/UNDP at the end of each quarter highlighting progress on implementation of the project. The PSC ensured that the secretariat submits within the stated timelines and met quarterly to ensure that reports are sent to donor on time.

Project Visibility and M&E has been done as per the work plan. Project visibility was promoted through various project products such as publishing of articles in the MOA agri-business news magazine, morning radio shows for Swaziland Broadcasting and Information Services, Swazi Television Broadcasting Cooperation and the Agri-business Newsletter. There was also branding of the project for all operational documentation and reports. The evaluation team further observed shooting of a documentary in the Project Development Area.

9.0 CASE STUDIES

Success Stories at Household Level

A much hailed initiative, the CSA project bears the efficacy of careful planning, implementation, and support from the Government, NAMBoard/MOA and partners for a project of this nature. Not only have the citizens been assisted in terms of empowerment with skills and knowledge, it has also brought about better understanding of Climate Change and Climate Smart Agriculture, and developed synergies among farmers and between stakeholders as well. Under the project, two striking examples of household success stories or farmers who have benefited immensely from the project can be identified (this is not to say others have not benefited). One at Mphatheni area and another at Nkhungwini area.

The evaluation team learnt from the farmer at Mphatheni that he has managed to acquire several implements including a car and harrow. He further revealed that through the CSA project he has managed to attract attention of other organizations (beyond project area) who want to know how he really does his farming. He has been cited in various quarters as the key resource example for the CSA project in the area. The farmer, under his belt, is estimated to have motivated numerous other farmers to adopt CSA. Unconfirmed figures suggest that the farmer has about 165 other farmers who adopted CSA as result of sharing information with him. Furthermore, his fields have been labelled as one of the demonstration sites for certain maize varieties. The farmer estimates that income from farming under CSA has risen to about E40,000.00 a year. Plates 4 and 5 show farm implements purchased with income from CSA project while plate 2 show the fields used for demonstration.

Plate 10. Farmer with her implements

Plate 11.Field demonstration

"Here at home CSA has been a pillar of our lives as a family. We have seen its benefit such that we often receive phone calls from other farmers seeking assistance in this regard. Had it not been for CSA techniques we wouldn't have able amass money to buy the car" CSA farmer

Plate 12. Maize fields with cobs about to ripen

Another farmer from Nkhungwini also has benefitted a lot from the project. The farmer has managed to accumulate enough savings through the CSA project such that she managed to buy a two wheel rotavator/tiller *(Local Name is"Dadanana")* (see plate 13). The women farmer uses the tractor for her own benefit and also rents it out to neighbours at a fee. The farmer revealed that before CSA she wouldn't be able to have such resources but through the project she can now buy whatever is within her means of existence. The farmer has also been able to pay school, fees for her children and grandchildren with money obtained from CSA project.

Plate 13. Two wheel Rotavator/tiller bought by farmer

In her own words the farmer had the following to say;

> *"The CSA project has empowered me as a woman not to rely on any anyone when it comes to finance resources. I have been able to buy this tractor, finish my Rondavel house and also pay school fees for me grandchildren"* Woman Farmer

10.0 LESSONS LEARNT

Implementing a project such as the Up Scaling CSA is no mean task with a huge budget, a large number of farmers, stakeholders and covering the three distant areas. Many good practices were developed along the way, the major ones being (a) capacity building of farmers in all 3 areas, (b) Accessing of national markets by small scale farmers, and (c) acquisition of CSA farming implements. These have already been highlighted in the preceding discussion, including issues about their effectiveness as implementing mechanisms. There have also been a number of emerging lessons, which NAMBoard may wish to consider in future design and implementation of similar programmes.

1. **Acquisition of knowledge and raising awareness is key in facilitation adoption of new practices:** Adoption of CSA small scale farmers in the study areas has been possible due to understanding of benefits from technology utilisation despite the challenges of CA. In this project a combination of classroom and field practical training/exchange visits on CSA demonstration plots was used to impart knowledge to farmers, leaders and agricultural extension staff to enhance adoption of CA. After realizing the benefits of CA from fellow farmers, other farmers adopted the CSA technique. Therefore, a combination of classroom and practical training was important to up scaling CSA technologies.
2. **Farmer to farmer knowledge and CSA technology transfer is key in quick adoption of practices:** The concept of ***champion*** farmers proved to be effective in the project's dissemination of information. The 93 champion farmers trained on CA and vegetable production principles will continue to guide and recruit new farmers into utilization of CSA methodologies.
3. **Availability and accessibility of technical support allows for mentorship on technology adoption:** The adoption of CSA farming technologies largely depended on the expertise of the Agricultural Extension Officers. Their continued availability and visits to farming sites enabled sharing of information. Furthermore, development of material/curriculum and manual printed for use by extension staff was also crucial in achieving uniformity in imparting of skills to the farmers.
4. **Land tenure system can have an impact on technology adoption:** Land tenure system affected the establishment of demonstration plots in CSA study areas. The initial implementation plan of action was to establish 4 demonstration plots in the project areas, however, only one (1) demonstration plot was established. The delay in the establishment of demonstration plots was largely due to traditional land tenure system of land acquisition.

5. **Community participation in planning CSA is key for ownership of project outcomes:** Participatory information dissemination methods involving farmers in problem analysis, setting extension priorities, planning and obtaining feedback from farmers are well recognized for its impact on technology adoption. The community involvement in planning through demonstration plots and farmers field schools provides such platform for farmers participatory and feedback. The CSA project employed farmer participation to sensitize, raise awareness and train on CA which contributed to high stewardship of project outcomes.
6. **Impact of Government procurement procedures on project implementation:** Government procurement procedures can delay the process of implementing interventions due to delays in accessing funds for general running of the project components. The delay was witnessed in provision of transport for extension officers, fuelling of vehicles, fuelling of tractors and replacements of implements.
7. **Synergy in private sector and Government to facilitate community projects:** The project has set an example on how the private sector and Government can work together to realize the goals of implementation/ design and CSA adoption by farmers. The partnership between NAMBoard and private vegetable farmers resulted in exchange visits being facilitated for the farmers to observed use of drip irrigation in privately owned farms.

11.0. CONCLUSION

The evaluation team, through evidence gathered and observations made, concludes that despite the challenges that have been highlighted concerning the progress of the project, it still has a great potential of achieving its goals hence becoming a panacea to the country's predicament of climate change. The project has a great potential to creatively engage farmers and communities, effectively transforming attitudes and norms to the benefit of the entire society for generations to come. It is hoped the findings and recommendations provided by the evaluation team serve to strengthen and guide future CSA interventions in Swaziland in a positive manner. Furthermore, the evaluation team concluded the following;

CSA technologies that conserve water (drip irrigation), soil moisture, improve soil fertility, use of adaptive crop varieties and types are highly essential. Implementation of these technologies at a particular site has the potential of increasing yields and incomes and changing lives of the famers. Other climate smart technologies such as reduced tillage, crop residue management to protect surface soil from erosion should be emphasized in farming so as to realize their benefits while also conserving soil fertility.

Land tenure and property rights in the country still remain a challenge if CSA is to succeed. It is necessary to review the land tenure system of the country which so far has a negative impact on adoption and establishment of CSA demonstration sites/plots in some of the study areas and commercialisation of SNL. Farmers would also invest more in land which they know has a secure tenure.

Acquisition of knowledge**,** dissemination of information and skills are vital in the quest for CSA technologies adoption by the farmers. One of the most powerful tools for dissemination is through 'famer to farmer' pathways. Other information sharing technologies include classroom, field practical training/exchange visits on CSA demonstration plots. These training methods have aided in the adoption on CSA technologies in the study areas and continue to have an impact on other farmers who may have doubts on the benefits of the project.

Similarly, imparting knowledge to farmer leaders and Agricultural Extension Staff to enhance adoption of CA has also had significant positive results for the project outcomes. These techniques ought to be strengthened in future interventions particularly at the design and implementation phases. This finding is in line with research which has proved that farmers who obtain agricultural knowledge through Extension/Training seminars as well as those with secure land ownership are likely to adopt climate smart agriculture. Participatory methods in project design and implementation work best for both the project team and the beneficiaries of the intervention. Beneficiaries' participation in planning through demonstration plots and farmers field visits provides such platform for farmers participatory and feedback. The use of this strategy by CSA project has aided in the sensitization, raising awareness, convincing other farmers to join, train, plan and implement CA.

CSA adoption by the farmers has the potential of improving lives of the beneficiaries as observed in this project. Through the income derived from the project, beneficiaries of the project have been able to acquire various assets to improve their livelihoods. Others have managed to send children for further education in schools, diversified the household diet, improve household food security and general up-liftment of status in society by being "***Champion Farmers***".

Farmers under the project have little knowledge on the business side of farming. This includes; the importance of keeping financial records, inventory of inputs, costs incurred, sales and profits released. As rightly pointed out by the Extension Officers, farmers under CSA project need to be empowered on business ideals (Agri-Business) so as to apply such knowledge in their farming activities.

Evidence from the progress reports seem to suggest that Project Visibility and M&E has been done as per the work plan. Project visibility was promoted through various project products such as publishing of articles in the MOA agri-business news magazine, morning radio shows for Swaziland Broadcasting and Information Services and Swazi Television Broadcasting Cooperation. There was also branding of the project for all operational documentation and reports. The evaluation team further observed shooting of a documentary of the project during data collection at Mpatheni as part of visibility of the project. Additionally, reports have been submitted to UNDP quarterly as indicated and monitoring visits have been conducted as well as per the agreement between COMESA and

UNDP. This has been vital for tracking the project progress and meeting the objectives/results of the CSA project.

The evaluation further concluded that much of the delays in the project implementation were exogenous rather than internal. These external factors delayed the project implementation by about four (4) months as reported in the quarterly report. These factors included tendering processes, supplier prices above budget, rainy season and unavailability of equipment to be utilized, especially heavy equipment, procurement processes and procedures within Government departments. These factors and others had a negative bearing resulting in missed opportunity in the showcasing the impact of the intervention during its project life.

Underestimation of the time required to strengthen the enabling environment. The baseline circumstances outlined by the project presented a situation where the farmers lacked capacity/knowledge, land issues and participation in CSA implementation so more time was required to deal with these issues prior to actual project implementation**.** Strengthening this enabling environment posed a challenge as it caused further delays particularly on the aspect of land acquisition for demonstration plots. The design was relevant with appropriate indicator targets, but the time for strengthening enabling environment was overlooked hence not enough.

12.0 RECOMMENDATIONS

In future programming:

- The project team should engage (early in the project designing stage) with community leaders, the Chiefs in particular who are the custodians of the land, prior to project implementation as the land tenure system and eventual allocation of land may take months or a year in some chiefdoms. This engagement should also consider having a budget for the payment of a cow as part of the "*kukhonta system".*
- The project team should consider having training of farmers on agri-business principles as they apply to farming. This would enable the farmers to be in position to keep proper records of farming, the sales the inputs, quantities of production and calculate profits/loses made.
- The project team should also consider having a separate CSA operational account for running the logistics and acquiring of project implements. The account will run the machinery, transport for officers, fuel, repairs and replacement of the implements. This will minimise the undue delays associated with Government procurement procedures.
- More CSA farming implements ought to be purchased, particularly the no till planter and boom sprayer which are in high demand yet only two were purchased to service five areas RDAs. At least, the project should consider purchasing three (3) more of these implements if the benefits of CSA are to be fully realised.
- The farmers should establish a fund that will cater for the maintenance of the drip irrigation scheme and procurement of any replacement parts that may be damaged in the long run. The fund will further enhance sustainability of the CSA project once the donor funding has ended.

The fund will be managed by the farmers through approved management structures with the group.

- Crop insurance for further mitigating Climate Change should be considered for rural small scale farmers, as severe drought has been witnessed the cropping season 2015/2016. The drought has necessitated introduction and adoption of crop insurance by farmers to further mitigate climate change.
- Limited use of technology for systematic information management (documentation, storage and sharing).The evaluation suggests a procurement of a vegetable management software system (e.g. **Plan-A-Head, Farm-soft**) that will facilitate planning and management controls, production inputs, irrigation details, purchases of pesticides, volume of produce per farmer, dates of expected harvesting, can estimate crop per farm per week, can assist in the planning of the backhouse activity and traceability of produce by farmers, see Annex 6 for costing of software.

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Annexes

Annex 1: Evaluation matrix

Evaluation parameter	Highly Satisfactory	Satisfactory	Moderately Satisfactory	Moderately unsatisfactory	unsatisfactory	Highly unsatisfactory	Remarks
RELEVANCE							
Needs of beneficiary captured	●						• Beneficiaries needs considered in the project i.e. vulnerability to climate change and food security
Relevant to needs & expectations of beneficiary	●						• Project is relevant for beneficiaries
Relevant to development priorities of Govt. of Swaziland (climate change)		●					• Aligned to national climate change priorities
Correct & accurate identification of target stakeholders	●						• Stakeholders correctly identified in project document
Whether the project is relevant to COMESA/UNDP focal areas;	●						• Relevant to the COMESA Climate Change Initiative and UNPD focal area (environment /climate change)
Whether a correct & accurate identification of target stakeholders	●						• Stakeholders identified (farmers, partners)
Is the project's management and coordination structure appropriate?		●					• Project has management structure • Beneficiaries need to be involved more
							•
EFFECTIVENESS							

were objectives, outputs and outcomes clearly articulated in measurable terms?	●						• Project objectives are clear and measurable
Is here linkages between objectives, inputs, activities, outputs, expected outcomes and impact was clear?	●						• There is clarity in the and linkage between objectives, activities and outcomes
To what extent is the project likely to achieve its intended objectives by project end?		●					• Projects has achieved most of the objectives • It is in the right direction to achieve the rest
Is there clarity of roles and responsibilities of the various institutional arrangements for overall programme management and implementation and the level of coordination between relevant partners?	●						• The roles are well articulated among the project partners • Namboard roles are clear • UNDP roles are well defined and other partners such as COMESA
Extent to which internal and external factors influence the achievement and non-achievement of the objectives			●				• Internal procedures within NAMBOARD such as meeting of reporting deadlines have contributed immensely • Delays have been caused by external factors such as tenders being over budget , Government procurement procedures
EFFICIENCY							
Are the resources that have been allocated to the project consistent with activities and intended outputs, outcomes and impacts?		●					• Resources were used on allocated activities and output and outcomes, impacts • No funds were diverted to un-intended activities •
Are they being used in a cost-efficient way?		●					• Resources used cost effectively as per plan, though there were some delays in government disbursements due to internal procedures
Was a formal work plan made at the start of the project to determine the timeframe in which activities would be performed?	●						• Detailed work plan prepared for all activities along with the resources responsible for performing the activities • Date wise timelines defined for each activity

Were resources made available to the project implementation agencies in accordance with the requirements of the work plan.							• Almost all the resource requirement fulfilled as per plan
Whether there was an adequacy of steps taken to resolve any conflict of interest in or due to the project?							• Adequate steps taken at right time to resolve all conflict of interest situations
Extent to which already available resources have been deployed (people, infrastructure, equipments etc)							• In kind contributions made by both NAMboard and Government
Extent of participation of the government in the project.							• Government fully involved and committing financial resources to project
RESULTS/IMPACTS							
Extent of utilization of the project outputs by the intended beneficiaries (that is, use of the new outputs as against the traditional options							• Most of the beneficiaries have adopted CSA practices, • Outputs not fully achieved (Nkhungwini)
Whether the project has produced its desired immediate outputs?							• Almost all immediate outputs achieved including all the major output
Are there any unforeseen/ unintended effects caused by the project on the target groups?							• Minimal unforeseen effects particularly in plot/ land allocation
Extent of the project results on the target beneficiaries in terms of (a) Citizen-Centric Service Delivery, (b) Capacity Building, (c) Change Management, (f) Public- Private Partnership and (h) Knowledge and Experience Sharing;							• Of all the areas relevant to the project, excellence has been achieved in most of the cases
Extent to which capacities have been built in stakeholders during the project							• Considerable ground covered in capacity building in stakeholders
SUSTAINABILITY							
Extent of ownership of stakeholders in the project;							• Beneficiaries and local stakeholders consider project as theirs • Involvement in the project activities

Degree of support given by the Government in integrating the project objectives and goals into the national development programme;		●					• The project derives its objectives from policies and climate change frameworks
Extent of availability of inputs/resources required for the project (people, finances, infrastructure, equipments);		●					• Project t equipment, staff and finances are readily available including Extension services
Have any revenue streams been defined in the project to make it self-sustaining;					●		• Project beneficiaries have not established fund for sustainability of project after funding has ended
Extent to which inventory of the assets created out of the grants received in the project have been properly maintained and transferred to the beneficiaries;				●			• Assets have been maintained well but not transferred to the beneficiaries
Degree of collaboration that has developed among stakeholders during the project	●						• Increased collaboration between the farmers through knowledge sharing • Good collaboration between Government and Private Sector
Extent to which government is willing to finance the project after its completion of the UNDP/COMESA funding		●					• Government has already committed resources including implements and staff to support farmers in the long run

Annex 2. Ratings for project achievements

Matrix for rating the achievement of project objectives and outcomes was evaluated by assessing the progress made towards the targets on the indicator set out in the logical results framework. The colour coding indicated under the rating of achievement is explained below;

HS	**Highly Satisfactory (HS):** (no shortcomings in the achievement of its objectives)
S	**Satisfactory**(There were only minor shortcomings)
MS	**Moderately Satisfactory**(there were moderate shortcomings)
MU	**Moderately Unsatisfactory**(the project had significant shortcomings)

U	**Unsatisfactory**(there were major shortcomings in the achievement of project objectives)
HU	**Highly Unsatisfactory**(The project had severe shortcomings)

Performance Area	Performance Indicator	Source of Verification	TE comments	Ratings
RESULT 1: Pilot of water saving technologies with conversion of existing high water-use irrigation technology and infrastructure to more water efficient technology in form of drip irrigation system.				
1.1: 30ha of irrigated land converted to drip irrigation	Improved irrigation and efficient infrastructure in place for 32ha fruit, vegetables and other high value crops.	Physical observation, proof of payment	Delays in upstream water infrastructure have caused most of the delays Drip installed at Mpatheni Nkhungwini still to implement drip irrigation	**MS**
1.2: Procure Mechanical Equipment for CA	Procure tractor drawn ripper (4) Procure Boom Sprayer (4)	Proof of payment and delivery, physical verification	2 boom sprayers were purchased during Fencing of conservation agriculture demonstration plot at Nkhungwini has been done, planting to commence in October and November.	**S**
1.3: Initiate a revolving fund for farm Inputs (Loan)	Number of farmers that have received input loans Amount of money derived from sale of vegetables and high value crops.	Revolving fund documents	• The revolving loan helps to kick-start the production process. • Not all farmers have been able to access the funds (Empatheni) is awaiting irrigation installation completion • Enkhungwini farmers accessing the funds	**MS**
1.4: Provision of Supply with harvesting material.	Sets of harvesting material purchased.	Proof of purchase,	• Equipment procurement has been done. • Harvesting equipment will be used later	**S**

		dispatch and receipt records		
Result 2: Capacity Building for Extension Staff and Farmers in CA and other CSA approaches				
2.1: Train Extension staff and Farmers on CSA approaches and technology.	Number of Staff (50) and farmers trained (406).	Training Attendance Records	• Staff training done (ToT for climate smart agriculture) • Training on agribusiness management	**HS**
2.2: Farmer Training – CA Champion Farmers	Number of '***Champion***' farmers trained.	Training Attendance Records.	• 93 farmers trained as **champion farmers** • Exceeding target of 70 farmers • trained farmers continue to guide and recruit new farmer into CSA	**S**
2.3: Farmer Training CSA technologies (All Farmers)	Number of Farmers trained.	Training Attendance Records.	• 406 Farmers trained on CSA technologies. Exceeding the 400 target	**HS**
2.4: Establish CA demonstration plots on-site	Number of demonstration plots established.	Physical Verification, proof of purchase for material	• One demonstration plot was established against the 2 planned (at Nkhungwini) • Project team should move fast in acquiring land for another plot	**MS**
2.5: Training of Farmers on production, harvesting and post-harvesting standards	Number of Farmers Trained Number of demonstrations conducted	Training Attendance Records.	• Farmers already practicing CSA • Farmers have not practiced the post harvesting standards as farming has just begun at Mpatheni	**MS**
2.6: Exposure and Exchange Visits	Number of visits conducted.	Proof of transport/lodging payments, trip reports.	• Farmers have been taken on exchange visits. • Farmers learn best when they see for themselves as opposed to classroom.	**S**

Result 3: Baseline study on CSA programming conducted				
Baselines study on CSA programming conducted	Baseline survey conducted. .	Baseline Report	• CSA baseline report has been completed and submitted to UNDP in December 2014	**HS**
Result 4: Project Visibility and M&E				
4.1: Project Monitoring and Reporting	# of Monitoring Visits Conducted	Monitoring Visit Reports	• Project steering committee member conducted visits	**HS**
	Micro-assessment conducted	Report	• One Micro-assessment was conducted (one more should have been conducted)	**MS**
	Audit	Audit Reports	• Two audits conducted, (Auditor General & KPMG) • Reports not available for evaluation	**S**
	Project Evaluation conducted	Monitoring Visit Reports.	• TE being conducted by independent evaluator (July 2016)	**S**
	Number of publications documented and disseminated	Publications, pamphlets, media stories, documentary	• Publications still to be was produced • Documentary underway • CSA Radio programme running	**S**
	Number of monthly reports submitted	Quarterly Reports	• 8 quarterly reports compiled submitted • No report received for evaluation in 2016	**S**
	Final Project Report submitted	No activity was planned for the quarter.	• Final report to be submitted by the end of the last quarter. Report not available for evaluation	

Annex 3 -Terms of Reference

Terms of Reference

for

Up-scaling Climate Smart Agriculture in Swaziland Terminal Evaluation

National Consultant Location:	Swaziland
Application Deadline:	18 March 2016
Type of Contract:	Technical Services
Languages Required:	English and SiSwati
Starting Date:	1st April to 30th May 2016
Duration of Initial Contract:	25 working days
Contact Person:	Ms Sithembiso Hlatshwako Programme Specialist, UNDP Mr Tammy Dlamini, Ministry of Agriculture - NAMBOARD

BACKGROUND

The **Up-scaling Climate Smart Agriculture in Swaziland Project** focused on the establishment of a sustainable and integrated farming technology model that would enhance climate smart agricultural interventions for future interventions and replication in different agro-climatic zones. This was to assist the country identify both policy and programmatic gaps as well as opportunities that will enable the formulation of adaptation strategies and programmes in the agriculture sector. The Ministry of Agriculture – National Agriculture Marketing Board (NAMBOARD) is seeking the technical services of a National Consultant to conduct a comprehensive Terminal Evaluation for the COMESA-funded Project that has been implemented since May 2014 and will be coming to an end in March 2016.

OBJECTIVES

To assess the achievement of CSA Project results, and draw lessons that can both improve the sustainability of benefits from the intervention, and also aid in the overall enhancement of climate change integration in agricultural productivity in the country. The review will highlight the marketing and value chain issues at various stages from inputs to production, culminating to household gains/losses. This is also to identify weaknesses and strengths of the project design and implementation strategy and come up with future recommendations to address identified gaps and inform future programming.

TASKS AND RESPONSIBILITIES

Framing the Terminal Evaluation along the criteria of relevance, effectiveness, efficiency, sustainability, and impact, through use of credible, reliable and useful data and information, the specific tasks will include, but not limited to the following:

1. Project Design:

 Review original project objectives and assess quality of design for delivery of planned outputs

2. Project Implementation: Assess:

 Project management arrangements.

 Quality, timeliness and cost-effectiveness of outputs and activities.

 Project reporting systems and their efficiency.

 Financial situation that is budget, expense status and the financial control system including financial reporting and planning.

 Flow of funds from UNDP to the implementing partner, NAMBOARD.

 Responsiveness of Project management to adapt and implement changes in project execution based on Project Steering Committee, UNDP, COMESA as well as local stakeholders.

- Partnership arrangements established for the implementation of the Project with relevant stakeholders involved at the national and local levels including clarity on the roles and

responsibilities. Implementation of the project M&E plans including any adaptation to changing conditions (adaptive management).

3**. Project Impact and Sustainability**

- Assess achievements of the Project to date against the original objectives, outputs and activities using the indicators as defined in the proposal.
- Review and evaluate the extent to which the Project impacts have reached the intended beneficiaries.
- Make recommendations on Project performance improvement in terms of effectiveness and efficiency in achieving impact on both capacity building and the targeted climate adaptation actions.
- Assess the likelihood of continuation of the Project outcomes/benefits after completion of the findings; describe the key factors that will require attention in order to improve prospects for sustainability of Project outcomes. Factors of sustainability include: institutional policy and regulatory framework that further the project objectives.

4. Project Lesson and Replication Approach

- Assess the extent to which the project activities opportunities are being taken to scale-up lessons and experiences emerging from implementation of adaptation actions and make recommendations on how this could be achieved if necessary
- Describe the main lessons that have emerged in terms of: strengthening national ownership; strengthening stakeholder participation; application of adaptive management strategies; efforts to secure sustainability; knowledge transfer; and, the role of M&E in Project implementation.

CONSULTANCY MANAGEMENT, DELIVERABLES AND APPROVALS

The principal responsibility for managing the Terminal Evaluation (TE) resides with the Ministry of Agriculture, National Agriculture Marketing Board (NAMBOARD). The TE will have the following deliverables:

#	Deliverable		Timing	Responsibilities
1	Inception report	Team clarifies objectives and methods of study	Not later than 5 days after entering contractual obligations, 9 April	Consultant submits to MOA NAMBOARD
2	Draft TE report	Draft full report with annexes	Within four weeks of the research process i.e. desktop review and field visits	MOA-NAMBOARD, UNDP AND COMESA review the draft to be presented to stakeholders
2	Validation workshop	Findings and presentation to stakeholders	Six weeks, 20 may 2016	National stakeholders validation
4	Final report	Revised TE report with comments and annexure	Within one week after incorporated comments from the stake holders	MOA project steering committee

The total duration of the study will be 25 working days spread from 1st April to 30th May 2016.

QUALIFICATIONS, EXPERIENCE AND COMPETENCIES;

A national consultants should at least possess:

- Master's degree in Agriculture, Climate Change, Environmental Sciences or other closely related field;
- Recent experience with climate change adaptation and mitigation in the agriculture sector;
- Competence in adaptive management of community schemes or projects as applied to Climate Change Adaptation;
- Experience working in SADC. Work experience in Swaziland will be an added advantage;
- Work experience in relevant technical in project review/evaluation for at least 7 years;
- Demonstrated understanding of issues related to gender and Climate Change Adaptation;
- Experience in gender sensitive evaluation and analysis;
- Excellent communication skills;
- Demonstrable analytical skills; and
- Project evaluation/review experiences within United Nations system will be considered an asset

Deliverable	**Payment %**
Inception report with tools and a work plan clearly specifying how the assignment will be undertaken and clear tasks assigned to each member of the team	20
Draft terminal evaluation report incorporation comments from stakeholders validation meeting and with an annex stakeholder consultation report on proceeding d of the process and validation meeting	50
Final terminal evaluation national climate smart agriculture report approved by ministry of agriculture project steering committee	30

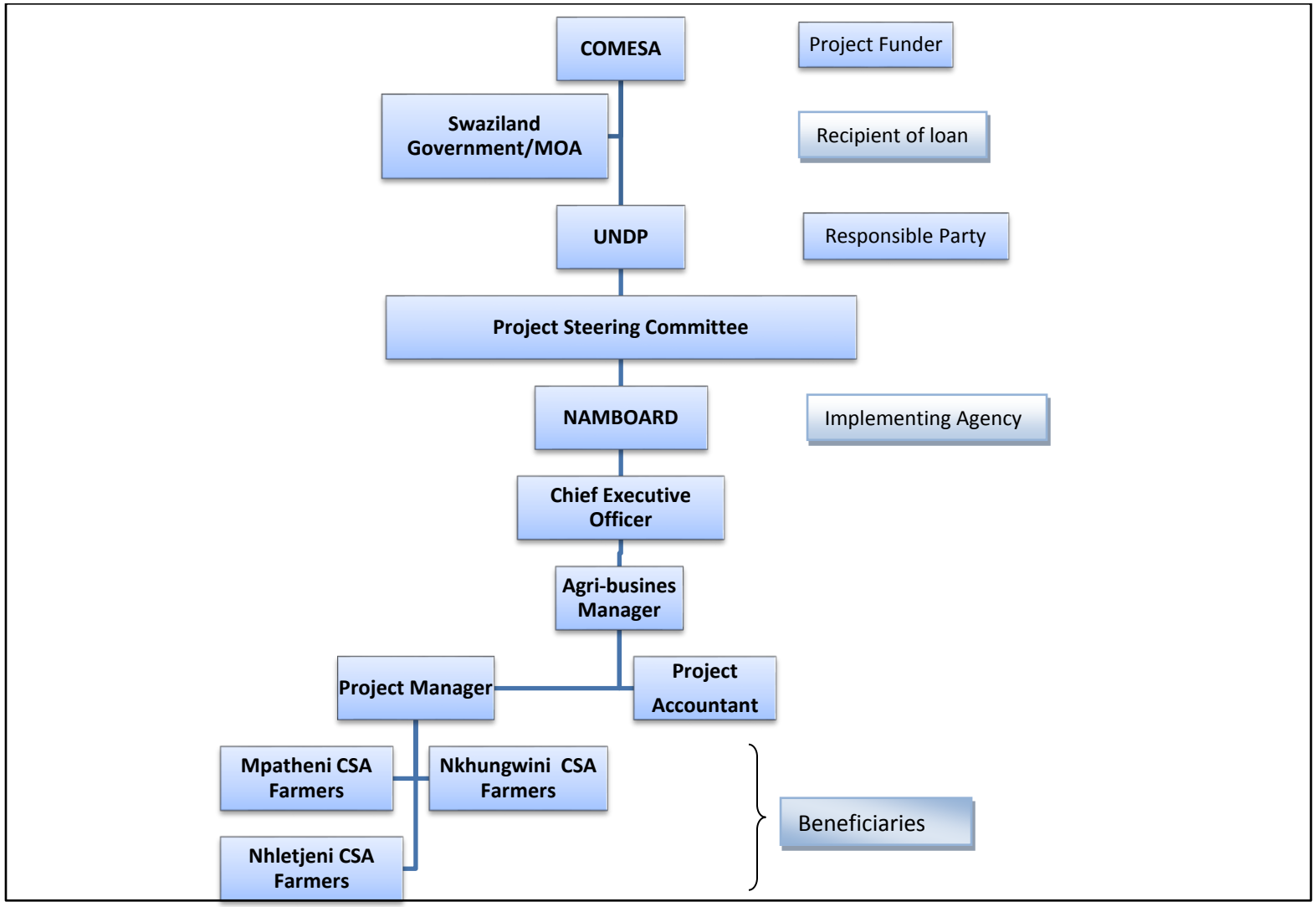
Qualified candidates may submit their complete Curriculum Vitae (CV) and an expression of interest electronically outlining the daily financial rate and the area of expertise by **21st March 2016**, via email to the registry.sz@undp.org marked (or subject): **NATIONAL CLIMATE SMART AGRICULTURE TERMINAL EVALUATION**

ADDITIONAL CONSIDERATIONS

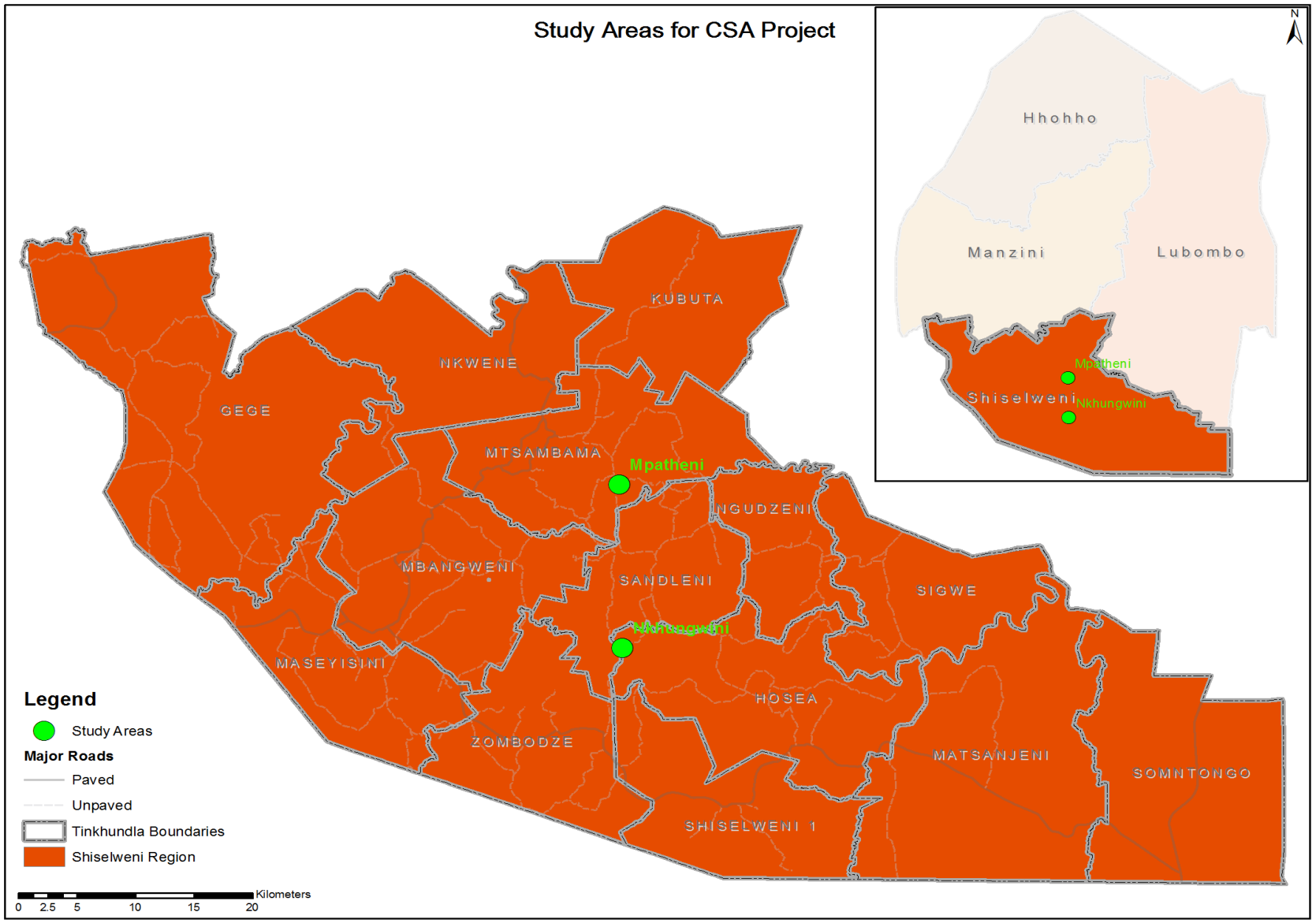
- Applications received after the closing date will not be considered.
- Only those candidates that are short-listed for interviews will be notified.

Qualified female candidates are strongly encouraged to apply

Annex 4. Project Management Structure



Annex 5. Map of CSA project areas (Mpatheni and Nkhungwini)



Annex 6. An Example of a Vegetable Management Program (Software)

QUOTATION

Company Name			
Contact Name			
Address			
Phone		Cell No	
E-mail	mrdc4049@gmail.com	Fax No	

Date	8/10/2016
Expiry Date	9/9/2016
Consultant	Sheldon Viljoen
Cell No.	0723607445

Qty	Description	Unit Price	Total Excluding
1	PLAN-A-HEAD VEGETABLE MANAGEMENT SYSTEM	R 6,500.00	R 6,500.00
1	PLAN-A-HEAD VEGETABLE MANAGMENT SYSTEM SLA	R 2,500.00	R 2,500.00
1	TRAINING AND TRAVEL	R 4,000.00	R 4,000.00
			R 0.00

	R 0.00
	R 0.00
	R 0.00
Subtotal	R 13,000.00
Discount	R 0.00
VAT 14.00%	R 1,820.00
TOTAL	R 14,820.00

SERVICE LEVEL AGREEMENT (SLA)

- The SLA is a Service Level Agreement and is mandatory for the first year.
- The SLA includes telephonic, email, remote support and updates on the Management Systems as they are released.
- Should you wish to cancel the SLA after the first year, one month's written notice before the anniversary date is required by PLAN-A-HEAD Management Systems.
- All benefits are ceded when an SLA is cancelled.
- Price of hardware is subject to change with the fluctuating dollar exchange rate
- Accommodation and travel costs would be for your account
- Subject to terms and conditions as reflected in our contract

QUOTATION ACCEPTED

Signature: _____

Date:_____

This quote is valid for 30 days from the date of issue

Banking details
Plan-A-Head Computer Systems CC
Standard Bank
Account number: 052160416
Branch Code: 057525
Swift Code: SBZAZAJJ

Plan-A-Head Computer Systems CC t/a Plan-A-Head Management Systems
318 Victoria Road, Pietermaritzburg, 3201
Vat Number: 4900179591 CK 1990/017429/23
Members: SG Lennon, PJ Lennon