



Up-scaling of climate smart agriculture in Swaziland

Including Pilot of up-scaling conservation Agriculture,

Water Efficient Irrigation Technologies and

High value crops marketing

For Nhletsheni, Nkhungwini and Mpatheni Schemes

Submitted to:

The Secretariat for Common Market for East and Central Africa (COMESA)

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List of Acronyms

CA	Conservation Agriculture
COMESA	Common Market for Eastern and Southern Africa
CSA	Climate Smart Agriculture
MoA	Ministry of Agriculture
NAMBoard	National Agricultural Marketing Board
ToT	Training of Trainers
UNDP	United Nations Development Programme

1.0 Introduction

Swaziland, as most parts of the World has been adversely affected by the negative impacts of climate change, which brings a lot of uncertainty especially in the field of agriculture. Over the years, this has resulted in reduced crop production, and to an extent is also affecting the livestock sector in the country. Most farmers are dependent on rainfall for crop production and are therefore vulnerable to reduced rainfall and accompanying moisture stress on the main crop which is maize, and this has seen the country experiencing food shortage for at least the past 11 years, increasing reliance on food assistance for survival and to meet daily food requirements.

To mitigate the effects of climate change and improve viability of the agriculture sector, especially crop production, the Government of Swaziland together with non state partners has initiated a number of interventions. Some of these include the construction of irrigation infrastructure in the form of dams and downstream development for crop and livestock production, and introduction of conservation agriculture which aims to reduce soil moisture loss and increase production using minimal tillage methods.

One of the climate smart initiatives introduced and promoted vigorously by the Government and other stakeholders is conservation agriculture (CA). This has been practiced in the country for over 10 years, with the use of champion farmers, demonstrations and continuous extension contact training for farmers in all four regions of the country. However, most of the training and practice has been on manual / hand-operated implements such as jab planter and hoe, this is against a back-drop of an agricultural system that has embraced mechanisation, with Government led tractor system in place. Whilst all initiatives have successfully promoted CA, there is a need to mechanise it, which will increase its attractiveness to a broader spectrum of farmers and thrust it into the commercial front.

Furthermore, to reduce the impact of climate change in agricultural production, the Government and partners have invested over E20 million (US\$2 million) in developing three irrigation schemes namely; Mphatheni, Nhlentjeni and Nkhungwini to improve the quality of life for rural households and communities. These are in addition to other water harvesting initiatives such as small earth dams which are developed in the dry regions of the country to improve access to water for agriculture and other activities.

These initiatives strive to achieve improved resilience of smallholder farmers to the impacts of climate change and strengthen marketing system for agriculture production in order to achieve sustainable food security. However, even with the initial investment the schemes were found to be running on 20% or less capacity, meaning that with further quality investment the schemes could become more economically viable and contribute to the livelihoods of the people, whilst also stimulating the rural economy. The irrigation infrastructure itself (use of basic furrow irrigation) has been cited as having very low water use efficiency thus a lot of water is lost to evaporation and seepage.

This proposal seeks funding from COMESA to enable the country to develop a climate smart agricultural intervention that will serve as a blue print for development in this area, and to strengthen the practicality of the model, a pilot project on climate smart agriculture will be implemented in Mpatheni, Nhletjeni and Nkhungwini areas, which are in close proximity, and have a combined hectarage of over 130 hectares of land, with over 200 households directly involved in vegetable production. The main actions to be undertaken include;

- a. Conducting a baseline survey in the four regions of Swaziland to establish and further, cost sustainable and integrated farming models that will enhance climate smart agricultural interventions. This will be used as a blueprint for the Government, donors and other development partners for future interventions. Whilst the project will be confined to three sites, the study will be countrywide to ensure that the different agro-climatic zones are well researched and options provided for agricultural production in a changing climate
- b. Implementing a Pilot Project (Mpatheni, Nhletjeni, Nkhungwini), which will be based on up scaling existing climate smart initiatives, with conservation agriculture being the main target. Up scaling conservation agriculture (CA) will mainly involve provision of tractor drawn implements such as a boom sprayer and mechanical planters / rippers. This is a bid to commercialise conservation agriculture for households to firstly attain food security and sell the rest, use of mechanical equipment will also increase efficiency, reducing time spent on land preparation and weeding, which time will be able to be used for other income generating initiatives.
- c. Pilot conversation of existing high water-use irrigation technology and infrastructure to more water efficient technology in the form of drip irrigation system. Of the total area, 10 ha (about 20%) from each of the three schemes will be fitted with drip irrigation systems, and planted to high value crops, which will in turn be linked to a reliable well researched market so as to ensure that income generated is meaningful and sustainable. The National Agricultural Marketing Board will be responsible for scheduling the production based on market demand, and will work with the farmers for training in different production and marketing requirements. The main markets will be derived from already established markets in Swaziland and internationally so that production is streamlined with what the market requires both in terms of quality and volumes. Data will be collected and reported on so that the model can be perfected with opportunities to expand area under drip irrigation and expand the model outside the proposed project areas.
- d. Provide exchange visits for farmers and extension staff, specialists and management to other countries where climate smart agriculture has been successfully implemented. This will be for the benefit of extension staff, champion farmers and selected farmers, the main interest being to see how other areas have successfully recruited, retained and enabled farmers to upscale CA to commercial farming levels. Of interest will also be how CA and production of profitable high value crops can be achieved without one compromising the other.
- e. Provide technical assistance to the participating farmers in the form of preparation and delivery of training material, coordinating production and marketing of produce. Assistance will also be

provided for the introduction and use of equipment for farmers and tractor operators. To achieve this, demonstration plots will be set up and training will be mainly conducted from there, and where necessary a classroom situation will be facilitated. This will be provided by different partners and specialists as appointed by the implementing agency and technical committee.

- f. Initiating a revolving fund for farm Inputs loans through repayment to be deducted from sale of produce. This will be managed by farmers themselves with strong support from NAMBoard and technical committee to ensure that they are well trained and mentored to carry this out in a business manner which will enhance sustenance and continuity of project objectives even after phase out.

2.0 Project description

2.1 Project justification

The project will undertake a baseline survey and develop a comprehensive climate smart agriculture footprint (including water harvesting and conservation agriculture programmes) to guide future investments and harmonise interventions in this area. This will be complimented by a pilot on water use efficiency with clear linkages to markets for small holder producers in selected areas within the Shiselweni region of Swaziland.

The proposed project is in response to the continued changing climatic landscape which requires a shift in the way agriculture is conducted in Swaziland and other parts of the World. The project will provide us with a current sustainable model which will be pilot tested over 30ha of land and this will include efficient irrigation scheduling, up scaling CA, and facilitating access to sustainable markets. This is a way of exploring how commercialisation for small holder farmers can be attained, using low-cost production methods, with an ultimate aim to build economical viability and resilience for households, especially resource-poor farmers.

2.2 Objectives

2.2.1 To undertake a study for the development of a comprehensive water harvesting and conservation agriculture program and provide baseline information for existing water schemes in Swaziland.

2.2.2 To increase food availability at household level through up-scaling of conservation agriculture

2.2.3 To improve the quality of life for at least 200 households directly (1200 beneficiaries) and more than 500 household indirectly through the sale and consumption of high value crops (including vegetables, pulses and sweet potatoes).

2.3 Key Deliverables from Project

2.3.1 Baseline survey conducted for climate smart agriculture programming, including options for cropping, livestock, and combinations, with costed actions to improve sustainability.

2.3.2 Pilot of water saving technologies conducted, with drip irrigation installed on 30ha of land producing high value crops that are market oriented and synchronised with marketing calendar and directly linked to markets through NAMBoard and partners.

2.3.3 200 farmers from 3 communities, Mpatheni, Nkhungwini and Nhletjeni trained in use of climate smart agricultural technologies including CA, drip irrigation and marketing of produce for household income generation.

2.4 Project Activities:

1. Project Administration

1.1 Technical Support / Consultancy: Support will be provided to participating farmers for successful implementation of the project through supervision and inculcating the principles of climate smart agricultural production to the farmers. This will include coordination of planting, variety selection and preparation of products for markets. The marketing aspect of the produce will be key to ensuring sustainability and continuity after the life of the project, thus the consultancy should facilitate and ensure that the produce under this project has access to reliable markets.

1.2 Administration Costs: The project will be administered on behalf of the Government by NAMBoard, and these costs include availing finance for implementation, ensuring that reporting to the recipient (UNDP, and COMESA) is done timely and correctly, and further ensuring that procurement of supplies is done timely following the correct procedures and subsequent accounting.

1.3 Transport: NAMBoard will provide a vehicle for transporting consultants and invariable any other supplies that maybe needed to ensure that the project is within the timelines for production and marketing. Further, it will serve in transporting inputs, monitoring officers and where needed farmers. The project is expected to fuel the vehicle. This will be based on obtaining rates and mode for transport at the time of implementation.

Project Supplies

2.1 Conversion of surface irrigation system that is already in place to drip and other water saving techniques: Supplies, technical specialists for the conversion of irrigation to drip. This will cover 10 ha at each site, with a total of 30 ha. (Refer to attached cost breakdown)

2.2 Supply of Farm Implements: The farm implements will be purchased for use with the tractor to be allocated from Government tractor pool that will be dedicated to the project. The implements are:

2.2.1 Mechanical planters for CA (1per region)

2.2.2 Boom sprayers (1 per region)

2.3 Supply of farm Inputs (Loan): This is to facilitate the initial up-scaling and thrust for production of quality high value crops. The inputs will be carefully selected from the market end for both field crops and vegetable crops to be used in the pilot. An agreement will be signed with each of the garden schemes on expectations for repayment of inputs into a revolving scheme that will be established to secure and grow future production. The inputs will include: legumes, sweet potato cuttings, fertilisers, vegetable seed/seedlings and purchase of Climate Smart Implements.

2.4 Supply with harvesting material: The right type of harvesting and handling material and supplies will be provided to the farmers involved in vegetable farming so that there is minimal damage and value for money in produce moved to the market. These will include crates /lug boxes, hessian sacks, vegetable and sweet potato bags and labelling material. This will be initially provided to the farmers as support to cost of marketing, and they will be expected to subsequently purchase their own when later needed.

3. Market Linkages

Marketing and market linkages are an integral part of the project and as such these should be well established at the beginning of project implementation. NAMBoard has been tasked with the responsibility of marketing farmers' produce under this project, within this context NAMBoard, with assistance from the Government will ensure that the correct facilities are in place for the success of the project. As part of their contribution, NAMBoard and the Government undertake to ensure the following;

3.1 Rehabilitation of cold chain facilities (satellite): These are located within 30km radius of all the targeted schemes, an existing packhouse constructed in the early 1980s will be revamped and a cold room installed to ensure immediate refrigeration of harvested produce to prolong shelf life.

3.2 Purchase of refrigerated truck (5mt): A truck will be purchased for specific use by these schemes, and where possible other schemes very close to the project. The truck will transport fresh produce from the fields to the satellite cold storage facility and subsequently to the main centre in Matsapha. This is to ensure that the cold chain is started within 5 hours after harvesting and is not broken up to the end user.

3.3 Running of cold chain facilities: The cold chain facilities will be manned by staff employed by NAMBoard, including the set up and maintenance of amenities such as water and electricity. This is to ensure top quality handling and that farmers' produce is well graded for good returns on investment.

4. Capacity Building for Extension Staff and Farmers

4.1 Training of Extension staff in CA technologies (ToT): 50 extension staff will be trained as trainers in Conservation Agriculture Technologies; they will then be monitored as they in turn train other staff and key farmers to enhance multiplier effect of the training.

4.2 Farmer Training – CA Champion Farmers: 75 champion farmers will be trained and will also assist to manage demonstration sites. These will be from the project area (35) and from outside the project area (40) to ensure that CA among other climate smart agriculture continues to be practiced.

4.3 Farmer Training – CA (All Farmers): Over the 18 month period, a total of 400 farmers will be trained in CA and implementation of different climate smart agricultural technologies; these include agro forestry, mechanical application of CA and other relevant technologies. The farmers will be monitored as they implement what they have learnt in their fields, and data will be recorded for documentation and lessons learnt.

4.4 CA demonstration plots – onsite: Each of the project sites will be equipped with demonstration plots measuring 2 ha each. This demonstration to be jointly managed by extension officers, NAMBoard and champion farmers will showcase various CSA activities, formal visits to the sites will be done every quarter by participating and non-participating farmers to learn and exchange ideas.

4.5 Exposure and Exchange Visits: These will be conducted within the country and in neighbouring countries. The main purpose is to facilitate enhanced learning, especially in the different CSA initiatives. Areas to be visited are those where CSA has been implemented effectively and farmers and extension staff will be able to share experiences with their peers.

5. Studies and Baselines

5.1 Baseline study on climate smart agriculture initiatives will be conducted, the result will be a document that analyses the situation in the Swazi context and provide guidance and options for up scaling of CSA initiatives in the country. This will then tie up with the results of the pilot project to provide an avenue for future programming and provide evidence based basis for up scaling CSA in Swaziland.

6.0 Project Visibility and M&E

6.1 Project Monitoring and Reporting: Reports will be provided to COMESA at the end of each quarter highlighting progress on implementation of the project. This will be the task of the technical team comprising of NAMBoard, UNDP, the Ministry of Agriculture, The Ministry of Tourism and Environment (responsible for climate change response), farmer's committees and this team will be chaired by the Principal Secretary of MoA or his designate.

6.2 End of Project Evaluation: to be conducted by an external evaluator, it will take into account what has been covered, successes, failures and lessons for future programming. The evaluation will also provide a basis for future programme design and implementation taking into consideration the baseline and results of pilot project evaluation.

6.3 Project Information dissemination: This will be to highlight the value of the project during implementation, this will be in the form of posters, brochures, publications and T-shirts informing stakeholders and interested people on the project and the value thereof.

2.5 Targeted Farmers

The project is currently targeting a total of 200 farmers operating in three (3) garden schemes covering a total of 140ha. This number is expected to gradually increase as the production and management is intensified. It is estimated that for efficient production each farmer will produce in an area of 2,500 m², thus with the current 140 ha there is enough capacity to bring on board a total of 560 farmers. With the increase in the number of participating farmers, the total number of beneficiaries will also increase to a potential 3,360 people excluding indirect beneficiaries through-out the value chain. The other component of building capacity on Climate Smart Agricultural production will target a total of four hundred farmers country wide during the life of the project, plus 50 extension officers with a potential of doubling this number depending on rate of adoption of the practices and technologies.

2.6 Institutional Capacity

NAMBoard who has been selected by Government as an implementing agency on her behalf is a parastatal entity (fully owned by the Government). The main function of NAMBoard, in line with its establishing Act (Act No. 13 of 1985) is charged with facilitating markets for farmers, assisting them with production, processing, storage, transportation, distribution and sale of scheduled products. NAMBoard is government's vehicle for speedy service delivery outside the government bureaucracy. Structurally, it falls under the Ministry of Agriculture and the Chief Executive officer reports to the Office of the Permanent/Principal Secretary of the Ministry while the Board of Directors report to the Minister's Office.

The institution has three sections to help achieve its mandate, these are: statutory (controls the importation of scheduled agricultural produce into the Kingdom), Farmer Support and Development Unit (helps farmers to develop their farming businesses), and Encabeni Fresh Produce Market (provides an outlet for produce by Swazi farmers).

The current budget for the institution is E25 million (\$0.125 million), and a total staff compliment of 90 people. The project will be managed under the agribusiness office, which will provide support in terms of technical knowledge, budgeting and marketing of produce. With staff capable in this area, the Agribusiness manager also has a background in grants management for major donors and will therefore be able to provide guidance and ensure adherence to requirements.

Additionally NAMBoard has all the requisite financial systems and is subject to a mandatory financial audit every year.

2.7 Project Management, Monitoring and Evaluation

2.7.1 Project Management

The Government has mandated the National Marketing Board (NAMBoard) as an implementing partner of the project. NAMBoard will work closely with the Ministry of Agriculture, collaborating ministries and other stakeholders within the sector to implement the project. The technical team will oversee the implementation of the project and provide advice where needed.

NAMBoard will also facilitate the training of committees elected by the participating farmers to manage the project sites. The committees will be mentored during the implementation period on proper record keeping and accounting to their constituency to enhance. Partners who are particularly strong in this aspect such as SWADE will support the farmers to form themselves into companies and conduct proper social mobilisation to empower the farmers.

2.7.2 Project Monitoring

Periodic monitoring will be in the hands of the technical team, however on a continuous basis, NAMBoard and Government extension officers will ensure that farmers get all the support that they need to manage the project well. NAMBoard will provide monthly reports to the members of the technical team and also provide feedback to farmers on their performance, both in production and marketing.

2.7.3 Reporting

The Ministry of Agriculture will provide quarterly reports, an annual report, and a final report at the end of eighteen months detailing both operational progress and financial status to the donor. A technical team including the Ministry of Agriculture, NAMBoard, SWADE, and other sector partners will be in place and will meet quarterly to review progress and provide advice on implementation. The team will also provide regular visits to the site for advice and streamlining implementation.

2.7.4 Evaluation

There will be a mid-term and end of project evaluation of the project deliverables will be conducted at the end of the project; this will be conducted by an independent evaluator recommended by COMESA and UNDP.

2.8 Auditing

An audited statement of accounts (expenditure) will be provided to UNDP and subsequently to COMESA. An independent and accredited audit firm shall be assigned to prepare audited statements for submission to the donor.

2.9 Sustainability

The project will be implemented as a complimentary action to already ongoing activities, thus it is not in isolation and will leverage resources such as staffing from current NAMBoard personnel. The project management function will over the period be absorbed into NAMBoard's operating structure. Furthermore, all project components will be fully incorporated into regular NAMBoard operations including funds for maintenance and continuing to service farmers. The training programme will also continue as part of NAMBoard facilitation requirements.

3.0 Budget

The total budget requirement for the proposed project is E5 663 250.00 (\$630 250) over a period of eighteen months, the Ministry of Agriculture on behalf of the Government is requesting for \$350, 472 (55.6%), with the remainder set to be sourced from within Government and NAMBoard resources. The breakdown of costs is detailed in attachment 1.

The funds provided by COMESA, will be received by UNDP in Swaziland and disbursed to NAMBoard who will in turn facilitate all the activities that require funding and provide full financial reports back via the same route.