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Climate-Smart Agriculture in Swaziland: Institutional and Policy Framework, Challenges and Policy Recommendations

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The concept of Climate-Smart Agriculture

Climate-Smart Agriculture (CSA) seeks to increase sustainable productivity, incomes, strengthen farmers' resilience, reduce agriculture greenhouse gas emissions and increase carbon sequestration. It strengthens food security and delivers environmental benefits. Climate-Smart Agriculture promotes agricultural best practices, particularly integrated crop management, conservation agriculture, intercropping, improved seeds and fertilizer management, improved livestock management, improved grazing land management, agroforestry, as well as supporting increased investment in agricultural research. It is broader than adaptation, and calls for more innovation and pro-activeness in changing the way farming is done in order to adapt and mitigate climate change while sustainably increasing productivity. Climate-Smart Agriculture practices propose the transformation of agricultural policies and agricultural systems to increase food productivity and enhances food and nutrition security while preserving the environment and ensuring resilience to a changing climate.

CSA practices and technologies in Swaziland

Climate-Smart Agriculture practices and technologies that are being promoted, adopted and implemented in Swaziland include conservation agriculture, use of kraal manure, green manure crops, agroforestry and planting of drought tolerant varieties.

Conservation agriculture

Conservation agriculture was first formerly reintroduced in Swaziland in 2002 by the Ministry of Agriculture (MOA) through support from the Food and Agricultural Organization of the United Nations (FAO) and the Cooperation of the Development of Emerging Countries (COSPE). Two sites were selected for the initial introduction of the concept: Shewula community in the north-east of the country and Kambhoke community in the south. A roll out programme, to cover the whole country, was implemented in 2006 in which participating farmers were supplied with the necessary CA equipment and related inputs. Conservation agriculture is being adopted by more farmers as they realise its benefits. The

advocates of conservation agriculture in the country include the Swaziland Agricultural Development Programme (SADP) International Relief & Development (IRD) African Cooperative Action Trust (ACAT) and World Vision International (WVI). SADP has trained 2,118 farmers in sustainable agriculture. Fifty youth groups were trained in vegetable and poultry production. A total of 1,600 farmers were trained and 1,200 prepared 288 ha using conservation agriculture techniques through the assistance of IRD. The farmers produced maize, sorghum and cowpeas under CA.

Drought and Heat Tolerate Crops

The Harmonised Seed Security Project (HASSP) which is being led by FANRPAN aims to increase the production and uptake of drought and heat tolerant crops in the country, for use by those at risk. Four open pollinated maize varieties have been released in Swaziland. They are ZM 309 (extra early duration), ZM 521/523 and ZM 611 (medium duration) and ZM 721 (long duration). It is estimated that about 50% of the farmers in Swaziland use recycled seeds (which are in most cases open pollinated varieties). The open-pollinated maize varieties have an advantage in that the seed can be recycled. They are also cheaper than the hybrids.

Irrigation for small-holder farmers

Out of the 52,000 ha under irrigation in Swaziland, only about 1,300 ha are under small-scale farming in SNL. The main factor preventing farmers from irrigating their crops was the lack of access to water. Water usage in the country is governed by the Water Act of 2003, and every user other than that for primary purpose is required to obtain a permit for the use.

The use of water for primary purpose includes the irrigation of land not exceeding one quarter of a hectare within a homestead.

Use of animal manure

About 23% of farmers in Swazi Nation land (SNL) rely on animal manure (kraal manure) for crop and vegetable fertility. Another 27% use a combination of animal manure and commercial fertiliser. There are some 600,000 cattle in Swaziland with a human population of about one million, a ration of about 2:1. Other farmers use goat manure on high value crops such as vegetables. The advantages of using organic manure include addition of nutrients to the soil, improving soil structure and pH, and the sequestration of carbon dioxide thus reducing its adverse effects on global warming. Large quantities of kraal manure are needed in the fields because of the low nutrient content, and the poorest of the farmers do not have livestock to source animal manure. Lack of transport of manure to fields not close to homesteads is another factor.

Agroforestry

Like conservation agriculture, agroforestry is an old land-use system that farmers have practised traditionally, as a necessity, for increasing soil fertility by relying on standing vegetation, mostly trees through the slash-and-burn shifting cultivation method in most African countries. The most common planted fruit trees are avocados, peaches and mangoes to name a few. They are planted in arable fields adjacent to homesteads where they can be looked after and protected from unauthorised harvesting. The indigenous fruit trees that are left to grow in grass

filter strips between ploughed lands include malura (*Slerocarya birrea*), water berries (*Syzigium cordatum*), figs (*Ficus* spp) and Velvet-Wild-medlar (*Vangueria infausta*)

Institutional setup for addressing CSA issues

The Ministry of Agriculture has the responsibility for ensuring food security in the country. It is responsible for developing and promoting appropriate technologies such as CSA. The departments and sections within the ministry that are relevant to climate smart agriculture are the Agricultural Research and Specialists Services, the Department of Veterinary and Livestock Production Services, and Agricultural and Extension Services. The Department of Agricultural Research and Specialists Services 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 of Veterinary and Livestock Production Services plays a major role in improving livestock management and grazing land management. The Agriculture and Extension Services is responsible for promoting crop production and providing agricultural extension services in farming systems and technologies that will assure increased and resilient food production.

The four parastatals that were created by the MOA to complement it in fulfilling its mandate are National Agricultural Marketing Boards (NAMBoard), National Maize Corporation (NMC), Swaziland Water and Agricultural Development Enterprise (SWADE) and Swaziland Dairy

Board (SDB). Non Government Organisations also provide extension services to complement the government extension service. They include WVI, IRD, ACAT and Caritas.

National Policy and legislative framework for CSA

The national policies that have a direct implication to food security (and climate smart agriculture) include the Comprehensive Africa Agricultural Development Programme (CAADP), the Comprehensive Agriculture Sector Policy, the Irrigation Policy of 2005, the National Food Security Policy and the National Agriculture Summit Action Plan of 2007.

CAADP framework

Swaziland signed the CAADP framework in March 2010. The specific goal of CAADP was to attain an average annual sectoral growth rate of 6% in agriculture. The CAADP framework commits African Governments to allocate at least 10% of national budgetary resources to agriculture and rural development. However, in the case of Swaziland, the budget allocated to agriculture has not reached the 10% mark. For example in 2010/2011 financial year, agriculture was allocated 6% of the national budget. This allocation was below the 9% that was allocated in 2009/2010. The allocation for 2014/2015 financial year was 3.5% of the national budget.

National Food Security Policy

The National Food Security Policy of 2005 aimed at addressing the threats and opportunities relating to food security in Swaziland. The policy provided key

strategies to be developed and implemented that will address food insecurity and poverty reduction. It recognised the effects of drought that bring about seasonal and inter-annual instability of food supplies.

National irrigation policy

The National Irrigation Policy of 2005 intended to provide policy direction in the irrigation sub-sector. It provides guidance regarding the measures that must be adopted in order to increase the national irrigated area. It also seeks to improve agricultural water management and existing irrigated agriculture thereby adding increased value to the productivity of labour and natural resources in Swaziland.

National agriculture summit action plan

The National Agriculture Summit Action Plan of 2007 was a direct government response to the plight of Swazi farmers who were increasingly operating in an environment that was challenging. These challenges included global warming and associated climate change, globalisation and market access barriers to lucrative markets in the northern hemisphere. The other challenges include dwindling water resources and diminishing river flows and alien invasive species. The issues that were raised in the summit included lack of knowledge on land suitability issues at community level, problems of land degradation and water resource storage and allocation as well as difficulties in accessing farm inputs. The recommendations included the production of nationwide land suitability maps to assist in developing a long term strategy of promoting integrated agriculture, building of water storage facilities, use of

agroforestry to rehabilitate degraded land and provision of subsidies for agricultural inputs.

Key challenges to implementing CSA

The challenges to implementing CSA in Swaziland include lack of comprehensive climate change policy and legislation, lack of legislation to implement key food security related policies, lack of local infrastructure to support the manufacture and repairs of climate-smart equipment, inadequate capacity within the Ministry of Agriculture, land tenure system that does not provide security over investment, some traditions and culture that disadvantages females, and poverty.

Climate-change policies and technology

Currently the country does not have a national climate change policy and no specific legislation on climate change. Climate change adaptation and mitigation activities are being undertaken without any coordination at national level. However, a national climate change strategy and action plan was developed by the Ministry of Tourism and Environmental Affairs in December 2013, and it is still awaiting approval by cabinet. Climate-smart agriculture is a key component of the draft national climate change strategy and action plan. The Ministry of Tourism and Environmental Affairs is in the process of developing a climate-change policy that will be followed by developing national climate change legislation.

Key policies related to agriculture and food security lack legislation to make them

operational. Such policies include the National Food Security Policy, the Comprehensive Agricultural Sector Policy, the National Irrigation Policy and the National Agriculture Summit Action Plan of 2007.

Hardly any conservation agriculture equipment is being produced locally. The outlets that distribute the equipment are also very limited. The equipment is often brought into the country through development partners and civil society organisations such as the Food and Agriculture Organisation, World Vision International, International Relief and Development, ACAT and Caritas. They are available to farmers who are funded by projects. The capacity to repair the equipment does not exist locally.

Agricultural research and extension

The Agricultural Research and Specialist Services of the MOA do not have enough funding to undertake the desired research. The facilities are obsolete and it is short of trained personnel. The number of agriculture extension officers has been dwindling over the past decade, from 300 in 2003 to less than 100 at present. The ratio of farmers to extension worker is too high, and as such the extension officers are not able to provide the services to all the farmers who need it. The problem was exacerbated by the government policy of not filling up posts that became vacant with the aim of containing the expenses associated with salaries of civil servants. Agricultural extension officers are remunerated at a scale of diploma holder (two year training), and yet the University of Swaziland that offers training in agriculture has phased out training at diploma level, and only offers training

from degree level (four years) and above. The Civil Service Board is reluctant to upgrade the posts for extension officers from diploma to degree level.

Land tenure, traditional laws and budget constraints

The land tenure system in SNL is such that the homestead head is allocated a piece of land to build homestead and some land for cultivation. Ownership of the land is vesting with the King, through the local Chief. The farmer does not have title over the land, and as such cannot use the land as collateral when needing finance for agricultural development. The farmer also lacks security that would encourage investing in CSA. Communal grazing is practised, and livestock feed on crop residues in winter, thus inhibiting conservation agriculture.

Under traditional laws, only males are allocated land for setting homesteads. Under the constitution of 2005, every person has a right to be allocated land in SNL irrespective of gender or marital status. Despite the dictates of the constitution, females still find themselves discriminated upon when they need land for allocation of homesteads or cultivation purposes.

The majority of the population (63%) lives below the poverty line in the country. They rely on natural resources for livelihood (such as harvest and sale of firewood and selling handicraft made of natural resources). Poverty may lead to overharvesting of the resources such as trees and shrubs that are important for agroforestry and carbon dioxide sequestration. The government has been having cash flow problems over the past four years, and the national budget has

been reflecting a deficit. The budget allocated to agriculture has been going down, from 9% of national budget in 2010 to 3.5% in 2014. This has led to some planned agricultural improvement activities not being implemented (such as building of dams for irrigation purposes).

Policy recommendations

The following policy recommendations are made on the basis of the analysis:

1. The decline in the number of agricultural extension officers should be corrected. The extension officers should also be adequately trained in climate change and climate smart agriculture.
2. Legislation should be enacted to implement the National Food Security Act of 2005, the Comprehensive Agricultural Sector Policy of 2005, the National Irrigation Policy of 2005 and the Comprehensive Africa Agricultural Development Programme (CAADP).
3. Climate-smart agriculture should be mainstreamed into core government policies and programmes, including policy, expenditure and planning frameworks.
4. Local institutions should be strengthened in order to improve CSA policy coherence and effectiveness.
5. National regulations and guidelines for adoption of CSA should be developed and implemented.
6. Incentives for CSA investments should be offered. The incentives should aim at overcoming barriers to adopt CSA practices. The incentives could include tax rebates for organisations or individuals that invest on CSA and recognition of environmental benefits of CSA by certifying products from conservation agriculture and related services.
7. An inclusive, gender sensitive space that promote multi-stakeholder dialogue about CSA should be created. Such as cross-ministerial roundtables, multi-stakeholder platforms for strategy development and efforts to coordinate national programmes.
8. Land rights for users should be secured by developing a comprehensive and integrated land policy.

Further reading

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