Upscaling climate smart agriculture -

Understanding trade-offs using scenario analysis

BENEFITS FROM CLIMATE SMART AGRICULTURE DEPEND ON CLIMATIC AND ECONOMIC CONDITIONS BUT SOCIAL POLICIES ARE ALSO NEEDED TO ADDRESS INEQUALITIES.

Trade-offs in upscaling climate smart agriculture

by Dr Marije Schaafsma, Dr Mark Hirons, Henri Utila

Summary

Climate smart agriculture (CSA) links food security and global climate change. It has been adopted by international development organisations as the main pathway for sustainable agricultural development. When CSA is scaled up, can it be aligned with other landscape level policies? Who benefits? What are the trade-offs, synergies, barriers and policy responses when scaling up CSA under different climate and economic growth scenarios?

Key messages

CSA will have limited effect on reducing inequalities and investment in literacy and skills development are critical to make sure that marginalised groups can benefit from CSA.

CSA strategies must also suit small land holdings, encourage diversification and support market access. CSA strategies must be aligned with existing policies across sectors and Ministries.

Smallholder farming

Smallholder farmers in Africa face an unpredictable mix of climatic, economic, political, environmental and social challenges. Smallholder yields and incomes are constrained by poor soils, infrastructure and access to markets.

Malawi's high levels of poverty, population density, and reliance on rainfed smallholder agriculture mean it is extremely vulnerable to climate change and prone to floods and droughts. Increasing yields and improving farmers' resilience to climate change and variability could improve food security and reduce poverty.

Climate smart agriculture

Climate smart agriculture (CSA) is an integrated way of managing landscapes for agricultural production, including crops, livestock, aquaculture and agroforestry. CSA practices enable farming communities to:

- sustainably and reliably increase agricultural productivity and incomes;
- adapt and build resilience to extreme weather events and a changing climate;
- where appropriate, contribute to reducing greenhouse gas emissions and concentrations.

Landscape Management

Upscaling of CSA in Malawi requires integration with Integrated Catchment Management. Integrated Catchment Management (ICM) is the main policy in Malawi to address natural resource management at the landscape level. ICM brings together economic development, poverty reduction, equity, and sustainable ecosystem management.

WATCH: FARMERS' VOICES

Six-hundred farmers in Zomba district were interviewed during this project. Watch this video to see their responses to the results: http://bit.ly/2nU6Lqn

FAST FACTS MALAWI

71%

of the population live below the $1.80 a day poverty line.

59%

of women in Malawi are literate compared with 73% of men.

97%

of farmers grow maize.

70%

of farmers cultivate less than 1 hectare

HYDROPOWER OR BIOMASS?

To protect forests, alternative reliable sources of energy must become available to rural and urban populations.

Methodology

We used a two-axes scenario analysis approach to identify trade-offs, goal achievement, benefit distribution, barriers and policy responses.

Climate and economy axes

The two axes were chosen after a review of existing scenario exercises performed in Malawi and 14 key-informant interviews. "Climate change" and "Economic growth" were the two most uncertain drivers of change that were expected to have high impact on the agricultural sector. Climatic change affects the suitability of CSA activities; economic growth determines costs of inputs and revenues from crop sales. The scenario analysis used a 25-year timeframe and looked at Zomba District.

Workshop

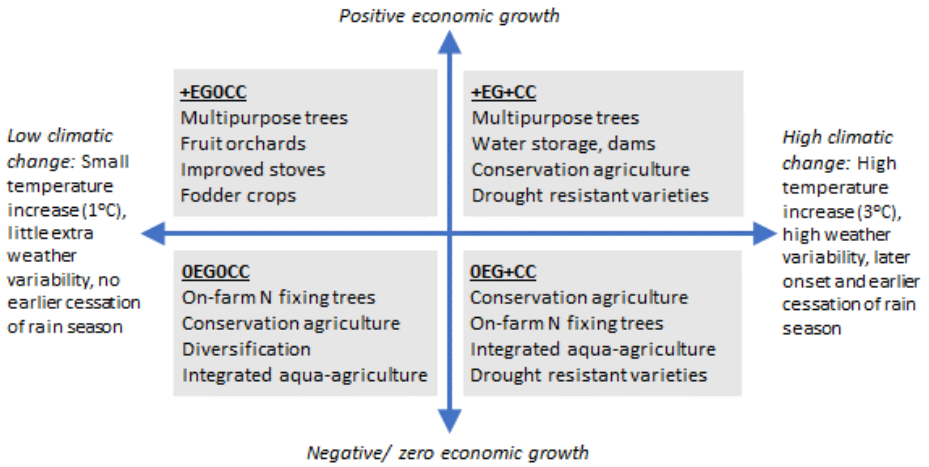
We organised a one-day workshop in Zomba in April 2016, attended by 24 representatives from the District Government, NGOs, research organisations and academia, civil society and farmer organisations.

After a discussion about CSA, its goals and links to ICM, we introduced the four scenarios. The participants were split into four groups. In interactive sessions and discussions, each group assessed one scenario. We analysed the responses noted on sheets and the transcripts of discussions.

CSA practices for Zomba, Malawi

In the workshop, stakeholders selected suitable CSA practices for Zomba District in Southern Malawi. The most reliable practices were conservation agriculture and integrated aqua-agriculture, suitable under 3 out of 4 scenarios.

The types of trees that were selected show that trees are expected to generate income in positive economic growth scenarios, and to replace inorganic fertiliser in no-growth scenarios. Drought resistant crops were selected in both scenarios with high climatic change.



Selected suitable on-farm climate smart agriculture techniques under the four scenarios

Trade-offs and challenges in upscaling CSA

Under which economic and climatic conditions will upscaling CSA be beneficial? The objectives of economic growth and sustainable environmental management were expected to be compatible in positive economic growth scenarios. But in times of economic downturn, sustainable environmental management, social development and equity objectives were not expected to be met.

Who benefits from CSA?

For most social groups wellbeing was expected to increase in the two positive economic growth scenarios. But economic decline is expected to reduce wellbeing for most groups with low climatic change. Wellbeing is expected to decline further for casual labourers and non-farmers when climatic change is high.

Main trade-offs

Is CSA compatible with ICM? Many trade-offs were highlighted, especially for the most pessimistic economic and climatic scenario. Achieving increased crop yields and positive social development or sustainable management were often expected to be incompatible. Participants did not believe that CSA practices would increase equality between poor and rich.

Key challenges

Lack of political will to support CSA by providing budgets and direction and lack of harmonised policies are major strategic challenges. Differences in practical CSA training and contradicting technical advice are the most practical key challenges.

Upscaling CSA would also require engaging with land reform processes, which has been difficult historically. Lack of market access limits farmer opportunities, especially with low economic growth conditions.

Recommendations, implications and opportunities

Literacy and inequality

The success of CSA depends on addressing literacy amongst youth and adults. Providing functional literacy training at the start of CSA projects builds the foundation for technical and business skills needed to benefit from CSA.

Mainstream gender equality through education and training must be part of an approach that addresses intra-household decision-making dynamics.

The poorest people will need social benefits and support systems. **CSA can help to improve farmer livelihoods and resilience, but is not a substitute for poverty reduction strategies.**

Small land holdings

CSA strategies may help to increase productivity and diversification. Planting a staple crop reduces the risk of market and climate volatility, especially when small land holdings and poor market access limit production and crop diversification.

Promoting livelihood diversification and self-employment in non-agricultural sectors is important especially for the youth. The Government also needs to strengthen and enact the Land Act.

Market access

Incentives, such as tax reliefs, micro-finance or subsidies, may help to achieve the goal of improved livelihoods upon CSA adoption. Farmers must be supported to access markets. There is little information available, especially in remoter areas, on farm input and output prices, and on demand and supply. This means that farmers cannot adapt their production to market changes and cannot sell their produce at the best price.

Facilitating the development of co-operatives would give farmers more bargaining power and access to finance markets. However, lack of trust among farmers within villages can limit the creation and success of cooperatives and farmer groups.

Policy alignment

Inclusive and equal CSA upscaling requires the collaboration of different ministries and sectors. For example, the Ministry of Gender responsible for literacy should be involved in any program to roll out CSA.

Including CSA in the Malawi Growth and Development Strategy would support successful upscaling. Civil society action and advocacy could stimulate support for CSA in agricultural policies. There is also a need to provide tailored and harmonised CSA advice.

Weather research and data

Investment in local and national weather stations and climate information centres would greatly support farmers in selecting suitable CSA techniques. Smallholders currently have little information about weather forecasts in the short and long term.

EXTREME CLIMATE CHANGE RISK

Malawi is one of the countries in the world at extreme climate risk. Due to the droughts resulting from the 2015-2016 El Niño event, 6.5 million people in Malawi needed emergency food assistance to survive and 137 thousand children were forced to drop out of school.

FARMERS PREFERENCES

Six hundred smallholder farmers were interviewed during this project. They provided their opinions and expressed their preferences for different on-farm options for CSA.

The results show that CSA projects should provide short-term benefits and any financial incentives be handled by a transparent, independent body. Preferences for crops differ between men and women, and according to nutritional and market value. The ability to deal with floods and droughts was an important aspect for farmers

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