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STAKEHOLDERS' ROLE IN IMPROVING SMALLHOLDER FARMERS' RESILIENCE TO CLIMATE CHANGE EFFECTS IN CENTRAL, TANZANIA

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Abstract

This article investigates the role of stakeholders and challenges encountered in combating adverse effects of climate change in central Tanzania. A total of 366 household heads and 36 key informants were involved in this study. Both quantitative and qualitative data were gathered through household questionnaire, Focus Group Discussions, in-depth interviews and documentary reviews. Descriptive statistics were used to analyze quantitative data and content analysis was used to analyze qualitative data. The study indicates that, the government, private sector and non-governmental organizations have supported smallholder farmers in adapting to climate change effects through education provision and material support. The research findings further indicate that through implementing climate change adaptive measures, various obstacles particularly inadequate capital, high price of agricultural inputs, limited financial support, inadequate markets, inadequate weather information and inadequate extension services have affected effective adaptive strategies. It is concluded that climate change is evident in the study area and various stakeholders have responded in different capacities. The study recommends on the need to strengthen the support in implementing viable adaptation strategies in the study area and other areas of this nature so as to increase smallholder farmer's resilience to withstand the climate change effects.

Keywords: stakeholders, challenges, climate change, vulnerability, central Tanzania

Introduction

Africa like other developing countries of the world is experiencing negative effects of climate change due to high dependence on rain fed agriculture. Tanzania, like other East African countries is experiencing changes in climate variables particularly temperature and rainfall [5; 3; 7]. Though all sectors have been affected by the changing climate, the agricultural sector is reported to be more affected due to its high dependence on rainfall [6; 4]. Studies by Majule *et al.* (2013), Habiba *et al.* (2012) and Bryan *et al.* (2009), highlight that effective adaptation to climate change effects require strong interrelationship between different stakeholders such as government, private institutions, agricultural extension services, researchers, Non-Governmental Organisations (NGOs) and the eagerness of farmers themselves to execute effective the proposed adaptive strategies.

Though various studies on climate change adaptive measures have been conducted in Tanzania, little is known on response of stakeholders in facilitating implementation of the adaptive strategies calling for the need to conduct such study. This study therefore attempts to examine stakeholder's role in implementing climate change adaptation strategies in central Tanzania. The findings from this particular research add to the existing body of knowledge on response of various stakeholders in combating climate change effects at local level. The findings further add value on revealing the challenges affecting effective implementation of adaptive measures on climate change effects thus inform policy makers and planners on formulation and implementation of viable policies and plans for proper adaptation to the changing climate.

Materials and Methods

This study was conducted in Dodoma region, central Tanzania. The study employed a cross-sectional design under a mixed method research approach. Household questionnaire, field observation, in-depth interviews, Focus Group Discussions were used as data collection methods. Analysis was carried out through the use of two software packages for data analysis namely Statistical Package for Social Sciences (IBM SPSS version 20) and Microsoft excel 2010. The software enabled data to be summarized using summary statistics (frequencies and percentages) which simplified interpretation and presentation of research findings. Qualitative data from FDGs, in-depth interviews and field observation were analyzed through content analysis.

Results and Discussion

Role of stakeholders and challenges faced in implementation of climate change adaptation strategies

The effective implementation of climate change adaptation measures needs commitment of both smallholder farmers and other stakeholders. Various stakeholders were reported to be involved in supporting smallholder farmers on adapting to the changing climate. The Tanzanian government institutions through the Agricultural Research Institute (ARI) located in Hombolo, Ilonga and Uyole were reported as key stakeholders on research and produce varieties of cereal crop seeds that are supplied to farmers.

Apart from public institutions, non - Governmental Organisations (NGOs) were also reported to provide support to smallholder farmers in adapting to climate change effects. These included the World Vision International (WVI), Rural Livelihood Development Company (RLDC) and the Agricultural Development Program (ADP) which supported smallholder farmers on tree planting, supply of agricultural inputs and provision of education on energy conservation methods.

Moreover, various Community Based Organisations (CBOs) were reported to be involved in facilitating adaptation to climate change effects. These included

the Community Resource Development and Management (CORDEMA) and the Dodoma Development Association (DODEA) which offered capacity building on agricultural extension services and facilitated awareness creation on climate change issues.

Furthermore, private and international institutions such as Agro Vet Company, Bussico Company and Construction Company limited have been working cooperatively with international organisations such as Food and Agricultural Organisation (FAO) and World Food Program (WFP) in supplying agricultural inputs and equipment in the selected areas as well as in construction and rehabilitation of irrigation schemes to support implementation of adaptation strategies.

Though smallholder farmers in the study area have implemented various strategies in adapting to adverse effects of the changing climate through the support of various stakeholders, they have encountered various challenges which hinder them to adapt effectively. The reported challenges include inadequate capital, high price of agricultural inputs; limited financial support, inadequate markets, inadequate weather information and inadequate extension services. Apart from the reported challenges at the community level, supporting institutions also reported to encounter various challenges particularly, limited economic resources, limited infrastructure, lack of coordination between one sector and another, limited legal and regulatory framework for policy implementation, complex decision making processes, time lags in implementing the strategies as well as limited technical support. All these have hindered effective implementation of climate change adaptation strategies.

Conclusion and Recommendations

It is the fact that climate change is real in the study area as various stakeholders have shown interest to support smallholder farmers to adapt effectively. The research findings indicate that smallholder farmers in the study area have implemented a number of adaptation strategies but they still encounter challenges like inadequate capital, high price of agricultural inputs, limited financial support, inadequate markets, inadequate weather information and inadequate extension services were reported as major challenges affecting their effective responses. The study therefore recommends on the need to strengthen trainings for both agricultural extension officers and smallholder farmers on appropriate measures to be taken for effective adaptation to climate change impacts in the study area. Improvement of peoples' livelihoods through enhancement of rural credits to small holder farmers in the study area is also necessary for strengthening adaptive capacities.

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