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Rethinking Water Storage for Agricultural Adaptation to Climate Change in sub-Saharan Africa

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Abstract

Across Africa some 200 million people are poor and food insecure largely because of their dependence on rain-fed agriculture. For many, climate change will exacerbate their vulnerability through adverse impacts on crop production, seasonal water resources and other climate sensitive aspects of rural life. Water storage is widely promoted as one of the principal mechanisms for adapting to climate change. For agriculture, this storage can take a variety of forms, ranging from groundwater, enhanced soil moisture, to ponds, tanks and small and large reservoirs. In any given situation each of these has its own niche in terms of technical feasibility, socioeconomic sustainability, institutional requirements and impacts on public health and the environment. To date there has been little systematic analysis of how climate change will affect existing water storage or how to account for climate change in the planning of new water storage in Africa. Appropriate storage will reduce peoples' climate vulnerability by increasing both water and food security but ill-conceived water storage may be undermined or may even worsen the adverse impacts of climate change. This paper describes preliminary results from a project being undertaken to develop guidance on how to incorporate climate change in the planning and management of agricultural water storage. The study addresses three key issues: i) how to identify the need for agricultural water storage; ii) how to evaluate the effectiveness (*i.e.* technical performance) of different storage options and iii) how to assess the suitability (*i.e.* socio-economic appropriateness) of different storage options. The intention is to develop a framework that enables comparison of different storage options in order to identify those that are most likely to be technically sound and which will maximise social, economic and environmental outcomes under both the existing and the future climate.

Keywords: Adaptation, climate change, sub-Saharan Africa, water storage