Risks of Climate Change on Future Water Supply in Smallholder Irrigation Schemes in Zimbabwe

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Abstract

Smallholder irrigation schemes (SISs) have been portrayed as a panacea to climate change adaptation. However, there is an emerging discourse that established schemes are becoming vulnerable to increased climate variability and change, particularly increased water stress. This paper reviews the existing knowledge on risks of climate change and variability in water supply in smallholder irrigation farming in Zimbabwe. In addition, this paper highlights adaptation options to climate change in SISs. Data for this review were collected systematically from peer-reviewed and published literature. The literature used for this study showed that SISs in Zimbabwe are beset with water stress, competing water needs and the outbreak of pests and diseases, which have been related with climate change and variability. Climate change is making Zimbabwe more arid through decreasing precipitation and warming. Droughts and floods are increasing in frequency and severity. Damage by floods is increasing exponentially, impacting environments, ecological systems and national economies. Climate change affects SISs' productivity and decimates the livelihoods of scheme farmers. The review suggests that there is a need for increased adsorptive, adoptive and transformational capacity for SISs to obtain a new state of resilience from adverse effects of increased climate variability and change. This review recommends understanding and prioritizing solutions to vulnerability to climate change in SISs.