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"Competition for Resources in a Changing World:
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Payment for Environmental Services (PES): A Driver for Promoting Sustainable Land Use and Environmental Stewardship among Smallholder Farmers in Sub-Saharan Africa

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Abstract

One of the greatest challenges of conventional production technologies used in the agricultural sector in many developing countries is that they are a major user of water resources and they contribute significantly to greenhouse gas emissions. Despite these challenges, there exists some agricultural production systems that are based on natural resource management principles that offer opportunities for producing food while simultaneously mitigating climate change, build up the soil biological capital resource and contribute to the sustainability of land use systems. In most cases however, field level adoption of theses technologies by smallholder farmers has generally been limited due in part to non supportive policy and institutional context, among other reasons. The low adoption is particularly more pronounced in low income countries where seasonal food deficits occur, as priorities are placed on food security much more than on the conservation of natural resources and on environmental quality. This paper draws on natural resource economics framework, and uses externality theory to establish that individual farmer's (private) investment in agri-enviroment technologies will always fall below the social optimum level of adoption of these technologies. To bridge the gap, other approaches beyond "sermons" (moral persuasions) and "police actions" (regulations) are needed. This paper argues for the institutionalisation of Payment for Ecosystem Services (PES) mechanisms as an additional approach to promoting agri-environment technologies.

Taking particular cognizance of the context of Sub-Saharan African countries, we identified options for addressing institutional and policy constraints and facilitate the adoption of agri-environment technologies to unlock its potential to satisfy both food production and global environmental goods. The options include the following: appraisal of regional and national policies to evaluate the extent to which they promote or constrain field level uptake of land use practices; conditional and targeted incentives for agri-environmental land use practices; cushioning financial vulnerability and bridging the time lag between investment and accrual of benefits; investment in information and capacity building of farmers and national extension systems to encourage farming communities to adopt agri-environment technologies; new institutional forms of science policy linkages to bridge the gap between technology developers and policy makers.

Keywords: Science-policy linkages, adoption, agri-environment, environmental services, payment for environnemental services, Zambia, willingness-to-pay

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