

Ecosystem Health and Sustainable Agricultural Development in Ihemi Cluster

Policy Brief

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Laying the Foundations for Effective Landscape-level Planning for Sustainable Development in the SAGCOT Corridor: Ihemi Agricultural Development Cluster (LIFELand)



Introduction

Agricultural landscapes provide a range of ecosystem services apart from producing crops. However, the inter-linkage of the ecosystem services and agricultural activities is poorly understood. For over 50 years, agriculture has been conducted without considering the natural ecological processes that safeguard agricultural production in the long run. To ensure that agricultural systems are sustainable, we have to make sure that the crucial ecosystem functions in the natural landscape are protected. Agricultural intensification, dramatic land use changes, application of agrochemicals and intensification of resource utilization are among the factors contributing towards biodiversity loss. The process of agricultural intensification is associated with an increase in labour inputs, increase use of natural and artificial fertilizer, use of improved seeds, change in technologies, change in agricultural

mechanization & frequency of cultivation, changes to the landscape such as irrigation or soil conservation measures. The agricultural inputs, for instance, have altered the key-hydrological processes of rivers, lakes, floodplains and groundwater-fed wetlands, damaging their ecosystems and services that they provide.

Agricultural intensification affects large parts of terrestrial area, therefore, assessment of its contribution to biodiversity loss is critical for successful conservation in the future. Irrigation, clearance of natural vegetation, and the construction of water storage facilities have all altered the timing and natural variability of water flows, damaging ground water recharge and wetland areas. It is claimed that agriculture in the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) is developed in harmony with the natural



Plate 1: Wildlife for Tourism Industries

environment, and maintains the benefits that ecosystems provide to farmers, communities, and the nation as a whole. Therefore, while there is little doubt that the agricultural intensification enables massive increase in agricultural yields in the cluster and beyond, negative environmental impacts cannot be ignored. The aim of this brief is therefore to highlight the contribution of agricultural intensification to ecosystem services availability in Ihemi cluster.

There are various threats and challenges towards sustainable ecosystems management in Ihemi cluster. Concerted efforts are needed in addressing them. People should be empowered to understand and practice sustainable agricultural management. Responsible authorities should ensure that the National Environmental Management Act of 2004 that oversees all issues on environment is enforced.



Plate 2: Valley bottom farming
Source: Field work

Approaches and Results

A range of qualitative and quantitative tools and techniques were used in ecosystem services and agricultural intensification assessment. The project team gathered a range of opinion across gender, age-group and wealth status. Data was collected across the two regions, five districts and 20 villages based on nature and level of agricultural activities performed, and ecosystem services obtained from the landscape. Representatives from over 607 households were surveyed and about 15 investors interviewed. Direct observation were also made to support the identification of ecosystem services availability to corroborate what has been explained by respondents and informants. The approach used was meant to identify key resource users, nature of use of the ecosystem services, main resources harvested and use pattern. Separate analysis was carried out for qualitative and quantitative data and a combined comprehensive interpretation was employed to provide meaning of the analysed data.



Plate 3: Tree logs for brick making



Plate 4: Nundu natural forest reserve in Njombe
Source: Njombe District Council, 2006

Results indicate that provisioning services are highly demanded by the majority of community members and their availability are increasingly scarce. Apart from provisioning services, investors in the area rely also on regulating function of the ecosystem because a well-functioning ecosystem supply the soil with needed nutrients that support plant growth and agricultural activities.

People in Ihemi cluster harvest forest products for different purposes including materials for construction, fuel, raw materials for pharmaceutical industry, traditional medicines, and necessary conditions for growing food. The trend depicted by members in Ihemi cluster matched elsewhere around the world. Availability of these services around Ihemi cluster is decreasing due to several reasons. Ihemi cluster is pressured by a growing demand for land to increase agricultural production through investments, tree planting and clearing of natural forest for different uses such as agriculture, urbanization and the draining of natural wetlands – valley bottoms for agriculture popularly locally



Plate 5: Tree nursery for Tree planning



Plate 6: Timber for construction purposes known as vinyungu. Their conversion to agriculture has impacted on the water resources by causing some rivers to dry-out or becoming seasonal. The sustainability of water supply is the Ihemi cluster is jeopardized by the human actions. To continue enjoying the ecosystem benefits, measure need to be put in place to facilitate tree planning, improved energy stoves, sustainable farming, etc. All the districts need to continue emphasizing tree planning, using of improved energy stoves and improving community awareness on bottom valley cultivation since these mostly are water catchment areas.

Conclusion

Cutting down trees for energy has contributed to the negative impact to the environment by cutting down trees which in turn leads to deforestation. Although most of the firewood used especially in Njombe come from wattle tree remains, the consumption rate is not equivalent to the regeneration capacity. Population increase in the area has also led to the increase in demand of firewood and other ecosystem resources. Traditional medicine that used to be readily available and highly used by majority, it has been scarce and difficult to find due to deforestation. To continue enjoying the ecosystem benefits, measure need to be put in place to facilitate tree planning, improved energy stoves, sustainable farming, etc.

Most of the wetlands (vinyungu) are water sources for the most rivers in the cluster. Their conversion to agriculture has impacted on the water resources by causing some rivers to dryout or becoming seasonal. The sustainability of water supply is the Ihemi cluster is jeopardized by the human actions. Equally important is a realization that farming in the Ihemi cluster not only occurs in the valley bottoms (vinyungu) but also in the dry land and notably in the high rainfall forested steep slopes area. Farming in steep slopes results into erosions thus

generating a lot of sediments that discharges into the wetlands/valley bottoms and rivers. Owing to this, most of the rivers in particular the Little Ruaha River which is the main river flowing the Ihemi cluster has silted up and its channel capacity has been reduced substantially.

Irrigation practices in most areas are still traditional and inefficient coupled with very low productivity. Even where the irrigation schemes have been improved, the on-farm water management is inappropriately practised. Along with this is the improper use of agricultural inputs including pesticides. This is largely attributable to lack of extension services on proper agronomic practices. It is important to note that irrigation waters that return to either groundwater or surface waters can contain salts, pesticides, or have elevated levels of nutrients such as nitrate and phosphorous. These contaminants in turn can cause harm to plant and animal life that depend on the returned water.

Implications and Recommendations

- Design a comprehensive policy that will

balance socio-economic activities with action to protect vital ecosystem services

- Policy makers should work to protect biodiversity to ensure that ecosystem can cope with change without degrading suddenly.
- Manage water catchment and its surrounding ecosystem
- Make sure that appropriate institutions are in place to protect ecosystems and manage water equitably
- Collaboration among water users to ensure that correct information is shared across groups and the basin authority
- All the districts need to continue emphasizing tree planning, using of improved energy stoves and improving community awareness on bottom valley cultivation since these mostly are water catchment areas.
- Devise interventions aiming at halting sediment generation on the steep slopes farming
- Address the key question as to why farmers are continuing practicing vinyungu farming and what mechanisms should be put in place to overcome the situation.



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