

Understanding determinants of farmers' investments in, and impacts of, soil and water conservation in Ethiopia: Review and synthesis

*Zenebe Adimassu, Simon Langan and Robyn Johnston
International Water Management Institute (IWMI)*

Although there has been a considerable effort to reduce soil erosion and improve land productivity in Ethiopia, farmers' investments in SWC remain limited. There is a long and rich tradition of empirical research that seeks to identify the determinants that affect farmers' investments in SWC practices. Nevertheless, the results regarding these determinants have been inconsistent and scattered. Moreover, the impacts of different SWC practices have not been reviewed and synthesized. Thus, this paper reviews and synthesizes past research in order to identify determinants that affect farmers' investments in SWC practices, and to also assess the impact of SWC practices within the framework of ecosystem services, particularly in relation to provisioning and regulating ecosystem services. The review identified several determinants that affect farmers' investments in SWC practices, which are categorized into two groups: (i) factors that are related to farmers' capacity to invest in SWC practices, and (ii) farmers' incentives to invest in such practices. Farmers' investments in SWC are limited by both the capacity to invest and incentives from their investments related to land improvement. The review also showed that farmers' capacities to invest in SWC practices and their incentives for making such investments have been influenced by external factors, such as institutional support and policies. This suggests that creating enabling conditions for enhancing farmers' investment capacities in SWC practices, and increasing their incentives for making such investments, is crucial. The review and synthesis showed that the impact of most SWC practices on provisioning ecosystem services (e.g., crop yield) is negative, which is mainly due to the reduction of effective cultivable area due to soil/stone bunds. However, these practices were very effective in regulating ecosystem services, such as soil erosion control, soil fertility improvement and surface runoff reduction.

Keywords: Soil and water conservation, Ecosystem services, External factors, Farmers' incentives, Motivation, Net Present Value.

Plenary discussion

The plenary discussion on watershed management, and soil and water conservation (SWC) was facilitated by Gete Zeleke from WLRC. The following main points came out of the discussion:

- It is paramount that we ensure the sustainability of SWC practices implemented by mobilizing ETB 28 billion worth of free community labor.
- It is important to ensure cross-learning between the various climate change initiatives that are being carried out in the country.
- Participants argued about the role of physical SWC measures in climate-smart agriculture or whether they should be considered as one. It was explained that physical SWC structures alone are not sufficient to meet the criteria of climate-smart agriculture and need to include protection of the area. In addition, to observe positive and higher economic returns from physical SWC measures (for example, soil bunds), it needs to be combined with biological measures. A single physical measure can have a negative impact on yield, but combined with a number of biological measures (to manage soil moisture and fertility) can result in improved yields.
- Farmers don't see the return from land conservation activities quickly, in order to provide them with the incentive to continue managing watersheds. Therefore, it is suggested that conservation activities need to be combined with agricultural intensification.
- Participants asked WLRC regarding the research studies on the overall SLM-related interventions, as to whether there were any trials to study with and without intervention scenarios. The response was that, in SLM studies, it is technically and scientifically correct to see an area before and after. In order to assess the situation with and without intervention, requires finding highly identical areas and this is naturally unrealistic.
- In response to a question, WLRC stated that it had captured hydrological data in its monitoring sites, and the data was available for anyone who is interested in accessing and using it.