



# The Livelihood Effects of Landless Cattle Owners' Participation in Hillside Rehabilitation in Tigray, Ethiopia

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## Research Brief

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### Abstract

*As many landless cattle owners in the Tigray Regional State in Ethiopia do not possess land grants, the regional government distributed bared communal hillside areas to them. In this act, the government hoped to give landless cattle owners the ability to supplement their incomes while also renovating the degraded hillsides. To determine if cattle owners have participated in hillside conservation and if their livelihoods have been impacted, researchers randomly selected 450 people from six districts to participate in semi-structured questionnaires. Results revealed that landless cattle owners in all the districts applied conservation methods, specifically installation of stone bunds, digging of trenches and tree plantations. Their main livelihood sources using the hillside areas included production of honey, fruits, livestock products, timber, vegetables, fuel-wood and animal fodder. Additionally, results indicated that factors affecting landless cattle owners' participation in hillside conservation included access to supporting services provided by forest experts and local authorities, memberships in village development committees, respondents' perception of land degradation and respondents' education levels.* 

### Bare hillside areas distributed to landless cattle owners to improve livelihoods and ecology

The Tigray Regional State in Ethiopia, characterized by arid and semi-arid agro-ecological zones, is extremely drought prone. In the region, cultivable land has long been distributed repeatedly for several years and, in the process, has become fragmented. Consequently, landlessness in the area has become the main cause of land degradation because many landless people depend on the remnants of small forest patches to sell firewood, charcoal and timber, to mine, and to cut tree branches and herbacious woods for their animals. In the act of addressing these environmental challenges, the regional government distributed the bared communal hillside areas to the landless people in the thought that the people could renovate the damaged areas while they supplemented their incomes using the hillside areas. Using these hillside land grants, the landless cattle owners have implemented various conservation practices while also maintaining their livelihoods. This study aims to verify whether these distributed non-arable denuded hillside areas have affected the livelihoods of landless cattle owners.



Stone-bund done in the hillside area, Kilde-Awlalo. (Photo credit: by Melaku Berhe)



## Researchers interview 450 people to determine their perceptions of land degradation

Researchers selected 450 people (418 males and 32 females) from six randomly selected districts in Tigray, namely Kola-Tembien, Hintalo-Wejerat, Kilde-Awlalo, Degua-Tembien, Alaje and Ofla, to participate in a semi-structured questionnaire. In order to get into the details of respondents' participation on hillside conservation, they were asked to what extent they were sensitized the damages they imposed on the environment due to their dependence on free-grazing, firewood and charcoal sales from the small forest patches.



Charcoal ready for sale in Hintalo-Wejerat, Tigray.  
(Photo credit: by Melaku Berhe)

## Landless cattle owners participate in hillside conservation

*Majority of respondents believe they are furthering land degradation through unsustainable practices*

The data gathered from the respondents confirmed that more than 90 percent of the respondents perceived that they negatively contributed to environmental damage due to their unsustainable use of the hillside areas. In response to their concern for continued land degradation, the landless cattle owners have implemented hillside conservation methods, including stone bunds, trenches and tree plantations.

*“The data gathered confirmed that more than 90% of the respondents perceived that they negatively contributed to environmental damage due to their unsustainable use of the hillside areas.”*

The minimum criteria set by the Regional Bureau of Agriculture and Rural Development has had important influence on hillside conservation by establishing local standards. Key informants confirmed that village-based development group committees, comprised of five members each, have been elected to make sure that hillside conservation methods are implemented in each village. The landless cattle owners, along with other community members, have agreed on the minimum requirements set for the purpose of hillside conservation based on the following points:

1. Any community member in a village is expected to construct at least 150 meters of soil bund in the hillside areas;
2. Any community member in a village has to implement stone-bund for at least 100 meters;
3. Anyone living in a village has to plant a minimum of 50 seedlings and ensure that the planted trees are protected and looked after and eventually achieves the highest number of survived trees.
4. Any community member in a village has to implement at least 20 cubic meters of deep trench per year.

Conserved hillside areas are protected on the will of the entire community and guarded by landless farmers appointed by the villagers. Hence, guarding continues turn by turn in this way for the whole year.

However, the mean performance of hillside conservation by the landless cattle owners in the study areas seems below the requirement set by the village community. For instance, the cattle owners only built 111.5 meters of stone bund, only dug 22 m<sup>3</sup> of trench and only planted 36 live trees during the year 2012-2013. This indicates the need to pursue closer relationships between cattle owners and extension experts and local administrators; with this technical support and help in mobilizing support, cattle owners will be better able to at least fulfill the minimum requirements set by the community.

*Technical support, education, memberships and more contribute to peoples' participation in hillside conservation*

The major factors that influence landless cattle owners to participate or not to participate in hillside conservation include supportive services provided by forest experts and local authorities; memberships in the development committee within the village; cattle owners' perceptions of land degradation; availability of credit and saving services; and the educational level of the respondents.

Local extension officers indicated that if cattle owners received more technical and administrative support from forest experts and local leaders, livestock holders would be more likely to apply more meters of soil and stone bund on mountainous hillsides. Holding other variables constant, the landless cattle owners that received support regarding hillside conservation implemented more stone bund in meters than those who did not receive any advice. This may imply that advisory services help foster collaboration between the entire community and landless farmers. Similarly, practical lessons and experiences disseminated by the forest experts and local leaders in the study areas hasten the actions of the landless farmers to engage in hillside

conservation. This further encourages the farmers to share responsibilities in hillside conservation with the community, which can eventually reduce costs. Accordingly, the landless farmers and the community at large will have intimate knowledge in how to renovate hillsides sustainably and are able to monitor and protect the area from any threats.

Participation in various development activities in the village is another important factor affecting the landless cattle owners' level of hillside conservation. Those livestock owners that partook in the village development committee tended to apply more meters of soil and stone bund than those that did not. Participation in the village's development committee may broaden landless cattle owners' awareness to the severity of land degradation. Both education and access to credit services have direct relationships with the level of hillside conservation. With respect to the educational level of the landless cattle owners, those having a secondary education perform less stone bunds than those with a tertiary education.

*Distributed hillside lands provide landless cattle owners with supplemental income sources*

The distributed hillside grants have provided landless cattle owners with the ability to pursue other income sources and thus improve their livelihoods. Income sources pursued include: sale of honey (26%), livestock (22.7%), sale of commercial eucalyptus trees (10.2%), sale of vegetables (9.3%), sale of firewood and charcoal (13.8%), and other sources (18%). Landless cattle owners admitted that they would actively participate in hillside conservation as long as it was found that conservation provided them with actual livelihood benefits.

About 62 percent of respondents were found to be dependent on the natural resources in the forests to sell firewood and charcoal (13.8% of income) as a supplemental income source. Landless peoples' continued efforts to sell firewood may show how short-run income needs have forced them to act on their short-term decisions without considering the long-term effects of their actions on the natural resource base.



*Animal fodder and guava trees in Kilte-Awlalo, Tigray.  
(Photo credit: by Melaku Berhe)*



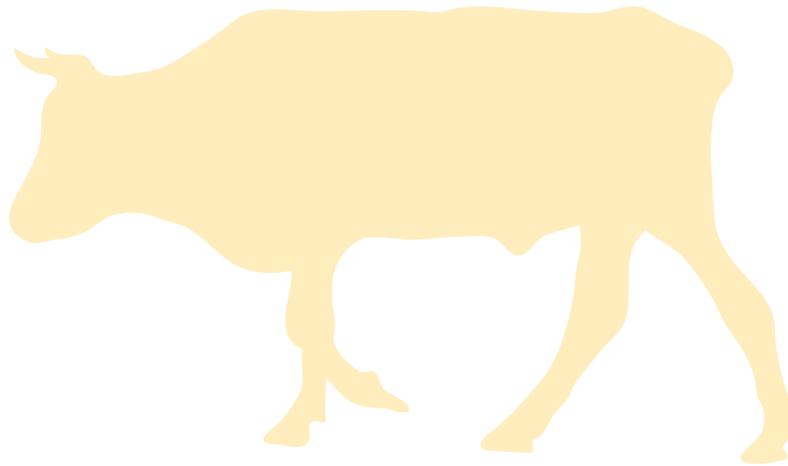
*Beekeeping in Kilte-Awlalo, Tigray. (Photo credit: by Melaku Berhe)*

This requires compatible intervention to shift the landless farmers towards other sustainable income substitutes, such as selling honey, planting commercial trees, selling high-valued vegetables, growing cash crops like coffee trees, rearing livestock or producing fodder — all of which are eco-friendly alternative livelihood sources.

*Drought and inadequate transportation challenge livelihoods on hillside areas*

Livelihood options based on the natural hillside areas are inevitably linked to hillside conservation practices. However, landless cattle owners find themselves confronted with several challenges, namely drought and inadequate transportation services. Drought has strong adverse effects on the entire livelihood base, as the steep slopes of hillside areas are immediately affected by moisture stress. This can lead to a total loss of water sources, such as flowing rivers, streams, ponds and deep water walls, which directly damages vegetables and fruit trees. And, with no plants to pollinate, bees will abandon the area. The severity of drought is higher in bared hillside areas than in hillsides covered with forests.

The other major challenge facing landless cattle owners is a lack of transportation access due to poor road networks. Rural areas where landless cattle owners live tend to have fewer roads, thus the roads are regularly in poor condition and private transportation service providers refuse to improve them. Because of this, landless cattle owners face unaffordable transportation costs. Also, farm sites on the hillside areas are far away from the center of the village, thus it is prohibitively expensive for landless people to sell their produce or purchase certain goods. 🐄



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**Feed the Future Innovation Lab for Collaborative Research on Adapting Livestock Systems to Climate Change is dedicated to catalyzing and coordinating research that improves the livelihoods of livestock producers affected by climate change by reducing vulnerability and increasing adaptive capacity.**

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